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No. 8

GREAT LAKES TOWING CO.

FINAL ORGANIZATION WITH ELECTION OF OFFICERS AND OTHER DETAILS AS TO MANAGEMENT--THE ISSUE OF STOCK.

The final organization of the Great Lakes Towing Co. is just as was expected as to officers. Although there is a directorate of fifteen members, the management, as far as directors go, will be largely confined to an executive committee of seven. The authorized capital of the company, which is a New Jersey corporation, is \$5,000,000, half common and half preferred stock, but it is understood that the issue of stock does not exceed \$1,700,000 of preferred, 7 per cent non-cumulative, and a like amount of common. The preferred stock, with the exception of a limited amount that is held in the treasury to be applied on further purchases of tugs if necessary, goes largely to the long list of vessel owners, who, as an underwriting syndicate, provided funds for the purchase of the property. Some of the preferred stock has also been distributed among the tug companies that sold out, as part payment for the tugs. The vessel owners also received common stock to the par value of their subscriptions, and the balance of the common stock, excepting a comparatively small amount held in the treasury, goes to the originators of the company, the managers of the syndicate and the attorneys, who accepted this stock as payment for their services. It is generally agreed among all parties interested in the consolidation that it has been very conservatively managed, with fair treatment to the tug lines that were brought up, and with decided promise of success for the new company, especially in view of the fact that the bonus of common stock goes to the vessel owners for the business which they have to give to the corporation.

The Milwaukee tug lines, the Dunham Towing & Wrecking Co. of Chicago and one of the Toledo lines, as well as the L. P. & J. A. Smith interest of Cleveland, were not taken over previous to the organization, as the syndicate managers were not satisfied to purchase these properties at the figures asked for them, and preferred to leave to the fully-organized company the matter of further dealings with these companies. It is understood that just as soon as the consolidation is in full working order arrangements will be made for a wrecking organization to care for the large vessel interests represented in the new company. In accepting the presidency, it is understood that Mr. T. F. Newman will not be required to relinquish any of his duties with the Cleveland & Buffalo Transit Co., as the management will be so arranged, with Gen. Geo. A. Garretson as chairman of the board of directors and with Mr. W. A. Collier as the active manager, that only a part of Mr. Newman's time will be required. The headquarters of the company, for the present at least, will be in the offices formerly occupied by the Vessel Owners' Towing Co., Cleveland. The organization takes effect as of date August 1, 1899. The secretary, Mr. M. H. Wardwell of Duluth, has been connected with the Inman Towing Co. of Duluth for some time past, having taken charge of office affairs of that company in the interest of the Philadelphia & Reading Coal & Iron Co. when it was reorganized. The full list of officers and directors is as follows:

President and treasurer, T. F. Newman of Cleveland; vice-presidents, Capt. James Davidson of West Bay City, A. B. Wolvin of Duluth and Edward Smith of Buffalo; secretary and asst. treasurer, M. H. Wardwell of Duluth; general manager, W. A. Collier of Cleveland; counsel, James H. Hoyt, Harvey D. Goulder of Cleveland.

Executive committee—Gen. Geo. A. Garretson of Cleveland, who is also chairman of the board of directors; Capt. James Davidson of West Bay City; A. B. Wolvin of Duluth; L. M. Bowers, Capt. Thos. Wilson, H. G. Dalton and C. E. Grover of Cleveland.

Directors—W. T. Coleman Carpenter, Newark, N. J.; Capt. James Davidson, West Bay City; A. B. Wolvin, Duluth; C. W. Elphicke, Chicago; C. D. Thompson, Port Huron; James Ash, Edward Smith, Buffalo, and Gen. George A. Garretson, Capt. Thomas Wilson, W. G. Mather, L. M. Bowers, L. C. Hanna, H. G. Dalton, C. E. Grover and T. F. Newman, Cleveland.

VERY HIGH LAKE FREIGHTS.

There is no let-up in the advance of freight rates on the great lakes. The efforts of grain shippers at Duluth to charter vessels for September and October at prices that are considerably better than \$1.50 on ore from the head of Lake Superior, would indicate that there is some fear among these shippers of inability to move the grain at any price. The ore companies that will be hardest pressed for the balance of the season are fortifying themselves by buying or chartering outright such vessels as they can secure. More negotiations of this kind are under way and will be announced within a few days.

Lumber rates are following the advance in grain and ore, and as the owners of lumber carriers rarely make season contracts, they will all store up more money as a result of this season's business than they have earned in the past three or four years put together. From the head of Lake Superior to either Chicago or Lake Erie ports are almost anything that is asked. Charters are said to have been made at \$3.25 a thousand for the most desirable boats.

Drake & Maytham of Buffalo have purchased the steel steamers Vega and Vulcan of Cleveland, or rather the great bulk of stock of the company controlling them, at a price said to be equal to about \$225,000 for the two vessels. The steel steamers Ira Owen and Parks Foster are also said to have been sold at about \$240,000, but there is nothing positive about this latter report.

ANTHONY POLLOK MEMORIAL PRIZE.

CONDITIONS TO GOVERN THE COMPETITION FOR THE BEST DEVICE FOR SAVING LIFE AT SEAFARE, ISSUED BY THE STATE DEPARTMENT.

Washington, D. C., Aug. 22.—A circular has been prepared at the state department containing the conditions to govern the competition for the "Anthony Pollok memorial prize" for the best device for saving life at sea. The text of the circular, which is signed by Mr. Cridler, third assistant secretary of state, is as follows:

The heirs of the late Anthony Pollok of Washington, D. C., have decided to found a prize in his memory, to be known as the "Anthony Pollok memorial prize." Mr. and Mrs. Pollok were passengers on the steamer La Bourgogne, and were lost when that vessel sank after collision with the Cromartyshire off Sable island on July 4, 1898. Mr. Pollok was held in the highest esteem by all who were privileged to know him and who were aware of the many good deeds he did, with a characteristic avoidance of ostentation. By his relatives and a wide circle of friends he is deeply mourned. A graduate of the Ecole Centrale of Paris, chevalier of the Legion of Honor of France, counselor at law at Washington, he owed his success to no happy incident, to no special favor of fortune, but to sheer force of character. His name is prominently connected with many of the most important inventions of the last half of the nineteenth century, and will always be remembered as a potent factor in the development of the patent system. He cherished a dream of universal patent practice embracing all nations of the world, and inspired in France the first step toward its realization in the international convention for the protection of industrial property, of which he was vice president. When the United States at first withheld its adherence he aroused the interest of manufacturers and appeared twice before the committee on foreign affairs of the United States house of representatives, answering objections and advocating the measure in printed briefs and oral arguments, finally attaining the object of his efforts. With sorrowing hearts and profound regret those who loved him and deplore his loss have founded this prize in sacred remembrance of their affection, and as a crowning monument to honor and perpetuate the memory of Anthony Pollok.

The prize is a donation of 100,000 francs (about \$20,000), to be awarded to the inventor of the best apparatus for the saving of life in cases of maritime disaster, and is to be open to universal competition. This sum is now on deposit with the American Security & Trust Co. of Washington, D. C., whose reliability is beyond question, and will be paid over to the successful competitor when a decision shall have been rendered by an appointed jury and formally communicated to the secretary of state of the United States through the commissioner general of the United States to the international exposition of 1900. The juror selected on behalf of the United States is Lieut. William S. Sims, U. S. N., naval attache of the embassy of the United States at Paris. In considering the award the jury will be governed by the following conditions:

The total amount of the prize may be awarded to a single individual on condition that the invention is of sufficient practical value and importance to justify the proposed reward. Should several persons enter inventions of equal value the jury, as it shall consider right and just, may award a portion of the prize to each. Should none of the inventions entered be of sufficient value to entitle it to the prize, the jury may reject any and all of them, but at the same time shall be empowered to indemnify competing inventors in such amounts as may be deemed advisable.

The essential details as to this prize have been agreed upon between Ferdinand W. Peck, commissioner general of the United States to the Paris exposition of 1900, and Alfred Picard, commissioner general of the universal international exposition of 1900. They have also had the substantial assent and approval of the French federal authorities to the end that the competition for the prizes may take place during the exposition. The instructions to competitors will be issued in due season by the jury, with the sanction and approval of the authorities of the French exposition. These will be distributed upon application. Correspondence, however, may be addressed to the members of the jury at Paris or to Charles J. Bell, president of the American Security & Trust Co., 1405 G street, Washington, District of Columbia, U. S. A.

FIFTY MILLIONS OF GRAIN FROM DULUTH.

Duluth, Minn., Aug. 22.—For boats to load during the first ten days of September 4 cents is offered on corn to Buffalo, and on wheat to be loaded during the latter part of September or first of October 4½ cents is offered. This is an advance of a cent a bushel over rates accepted by vessel men only a short time ago. One of the vessel agencies here has just sent out the following summary of the northwestern grain outlook:

New wheat has begun to arrive and it is the general opinion here now that, although the northwestern grain crop will not equal the enormous yield of last year, it is assured with another week of good weather that the harvest will be somewhat larger than the average. In about a week the movement of the new crop will assume important proportions, and it is likely that 50,000,000 of grain will seek shipment from this port during the next three months. About 5,000,000 are under charter for the months of September and October, some of it (last half of September) at 3½ cents, but 4½ cents was paid a few days ago for October loading. Shippers now manifest less interest in futures, however, than formerly as there is at present no export demand.

The coal movement drags and the head of the lakes will certainly be very short of coal unless the receipts improve at once.

GERMANY'S GREATEST SHIP YARD.

In the general interest that attaches to progress made by German ship builders within the past few years, attention is directed particularly to the "Vulcan" of Stettin, which takes first place in point of importance among all the ship building establishments of that country. Its equipment and the work turned out from it bring it quite up to the level of any other ship yard in the world. It was at these works that the Kaiser Wilhelm der Grosse, the largest and fastest vessel now in service, was built, and here too was launched, only a short time ago, the 10,000-ton North German Lloyd steamer König Albert.

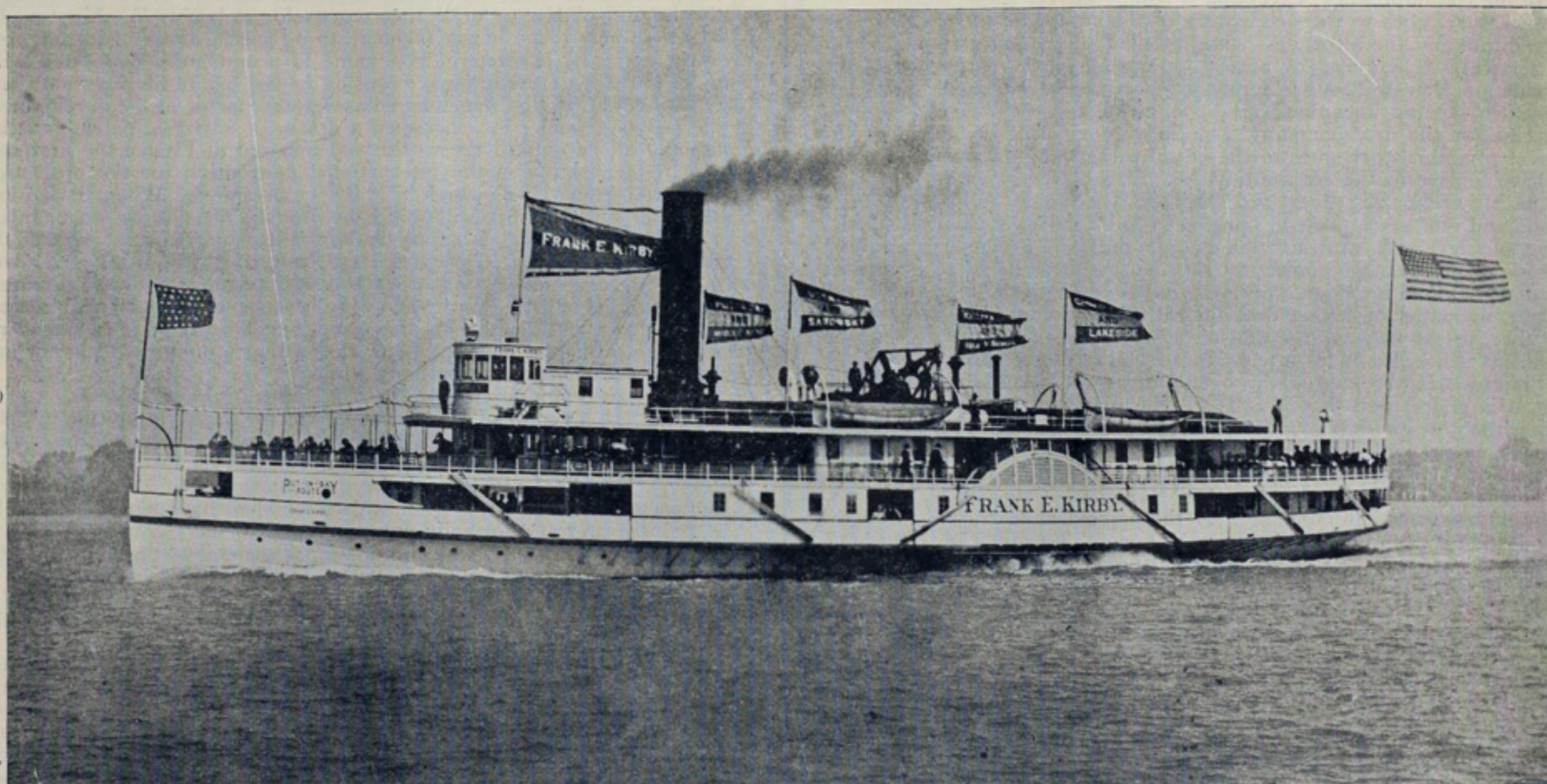
The foundation of this establishment dates from 1851, when Messrs. Früchtenicht & Brock set up a yard at what was then the small and unimportant village of Bredow, near Stettin, for the building of iron ships. The firm, however, had only a small capital at command, and the establishment had therefore to be kept within correspondingly narrow limits; in fact its extent was not more than one-tenth of what it is at the present day. The firm worked the business for their own account up to 1857, when it was decided—in order to provide the capital for extending the business—to turn it into a stock company. Thus arose, through the cooperation of six Stettin and two Berlin merchants and manufacturers, the Stettiner Maschinenbau-Aktiengesellschaft "Vulcan," with a capital to start with of a million thalers (three million marks). Soon after the formation of the company the construction of locomotives was taken in hand; the first one was delivered in 1859, and from that time up to the present day nearly two thousand locomotives have been turned out from the Vulcan workshops on account of home or foreign railway companies. The original capital of three million marks has been gradually increased up to eight millions; but it is not this increase of capital alone which gives a correct

Grosse, Friedrich der Grosse, and Königin Luise), and five were for the Hamburg-American Packet Co. (Auguste Victoria, Fürst Bismarck, Patria, Palatia and Patricia). Among the vessels now in hand are two large twin-screw boats for the North German Lloyd, and two ditto for the Hamburg-American line. For the last-named company will also soon be completed a twin-screw steamer of the very largest type, to be named the Deutschland; this colossal boat will be 663 feet in length and of 23,000 tons displacement; her engines (a pair) will together be of 33,000 horse power indicated, and she is to enter on her first voyage next spring.

GREAT PRAISE FOR THE CANAL COMMISSION.

The fact that the majority of the commission which is now investigating the most feasible and practical route across the Isthmus of Panama for a canal, comprises five such able engineers as Messrs. Noble, Burr, Morison, Hains and Ernst is one of which the engineering profession and the nation is to be heartily congratulated on—the appointment of Alfred Noble of Chicago is especially worthy of commendation. There is probably no American engineer better fitted by talent, experience and reputation, to undertake the responsibilities which will be placed upon this commission, than Mr. Noble, and engineers throughout the country will recognize his appointment as one conspicuously appropriate.

Of the others, Messrs. Burr and Morison have made their reputations through their achievements as structural engineers, and have not had extended experience as hydraulic engineers, but at the same time their knowledge, eminence and broad ability should render them valuable members. Generals Ernst and Hains are both competent men, the former possessed of much experience on the Missouri and Mississippi river com-



From 1899 Blue Book of American Shipping.

SIDE-WHEEL EXCURSION STEAMER FRANK E. KIRBY OF DETROIT.

Owned by Ashley & Dustin.

A STEAMER CAPABLE OF MAKING 20 MILES AN HOUR IN REGULAR SERVICE—BUILT BY DETROIT SHIP BUILDING CO.

idea of the scale on which the "Vulcan" has developed in forty years. This is better expressed by a statement of the value of the buildings and plant. In 1857 this amounted to 1,900,000 marks, while it now stands at over 22,000,000 marks, or ten times more than it was at the birth of the company. The superficial area of the ground occupied, too, which in the year 1870 was only 18 acres, is now 58 acres, and the area covered in by the workshops, which was at first about 20,000 square yards, is now more than 60,000 square yards. The number of hands employed has also grown in proportion. From an annual average of 1,800 men at the start, the average has risen to 6,300.

A number of magnificent vessels—both for war and mercantile purposes—have been built at this establishment. The first vessel constructed there was the paddle steamer Dievenow, for a Stettin firm, and she is still, after forty-seven years, in active employment. The first small war vessel was built for what was then the Prussian navy in 1866; in 1869 the first set of large marine engines was built for an armored frigate—the Hansa; and the first order for a large ironclad for the German navy—the Preussen—was given to the "Vulcan" in 1871. Up to the present time, including vessels now in course of construction, 247 ships have been put together on the "Vulcan" stocks, sixty-one of them being large or small war vessels, 137 of them large or small mercantile screw steamers, and forty-nine paddle boats of different types. Seventeen of the war vessels were for the German navy, six of them being ironclads of from 6,000 to 10,000 tons displacement, and eleven of them (two being ironclads of 6,000 tons displacement) were for foreign governments. Of the merchant vessels built, seven were large trans-Atlantic swift steamers, varying in length from 450 to 633 feet; twenty-six large transatlantic cargo and passenger boats, varying in length from 260 to 560 feet; 42 medium-sized cargo and passenger boats, from 150 up to 250 feet in length; fifty-six smaller vessels of the same kind, and six ice-breakers. Four of the largest steamers were for the North German Lloyd (Kaiser Wilhelm II., Kaiser Wilhelm der

missions and the latter especially familiar with the Nicaragua problem. Ex-Senator Pasco and Professor Emory R. Johnson are presumably placed upon the commission to look after the commercial and economic aspects of the problem which form so large a feature of the subject.

The new commission starts on its work under much more favorable auspices than either of the two commissions which have preceded it, since both the Ludlow and the Walker commissions were limited in their scope to the investigation of the route of the Maritime Canal Co. of Nicaragua. The adverse report of the Ludlow commission and modifications recommended by the Walker commission have not strengthened the position of this company before the public, and as its charter will have expired before the next congress assembles, this limited range of inquiry is not a matter of especial importance at the present time.

This feature being eliminated, the new commission starts on its work under very favorable auspices. The public sentiment in favor of government construction, and against subsidies to or alliances with any private corporation, has now been made so evident that there will probably be little attempt to influence the action of the commission. Enough preliminary work has been done on all the proposed routes to greatly facilitate the commission's work and enable it to make a much broader study of the question than has been possible at any previous time. The public will await with interest the final conclusions.—Engineering News.

The Atlantic Works, East Boston, Mass., is overhauling and repairing the steam yacht Dora, recently purchased by the United States government for marine hospital service between Key West and Cuba.

The Nickel Plate road offers special low rates to Scranton, Pa., account letter carriers convention. Tickets available Sept. 1, 2, 3 and 4, good returning until Sept. 12 inclusive. Inquire agents of the Nickel Plate road for further particulars.

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SHIPS FOR LIVERPOOL-AUSTRALIA SERVICE.

A picture of the steamer *Medic* on this page is from a sketch by R. Quiller-Lane, marine artist of London. The *Medic* is the pioneer ship of the new White Star service from Liverpool to Australia and Tasmania. She left Liverpool Aug. 3 and will be followed Sept. 7 by the *Afric* which is now in Belfast getting in a refrigerating plant of the Hall kind. These two ships are to be followed monthly by the *Persic*, *Runic* and *Suevic*, all built and engined by Harland & Wolff, Ltd., of Belfast, Ireland. They are of 12,300 tons each and represent in every detail the best practice of ship building for vessels of their kind.

OUTLOOK IN BRITISH SHIP BUILDING.

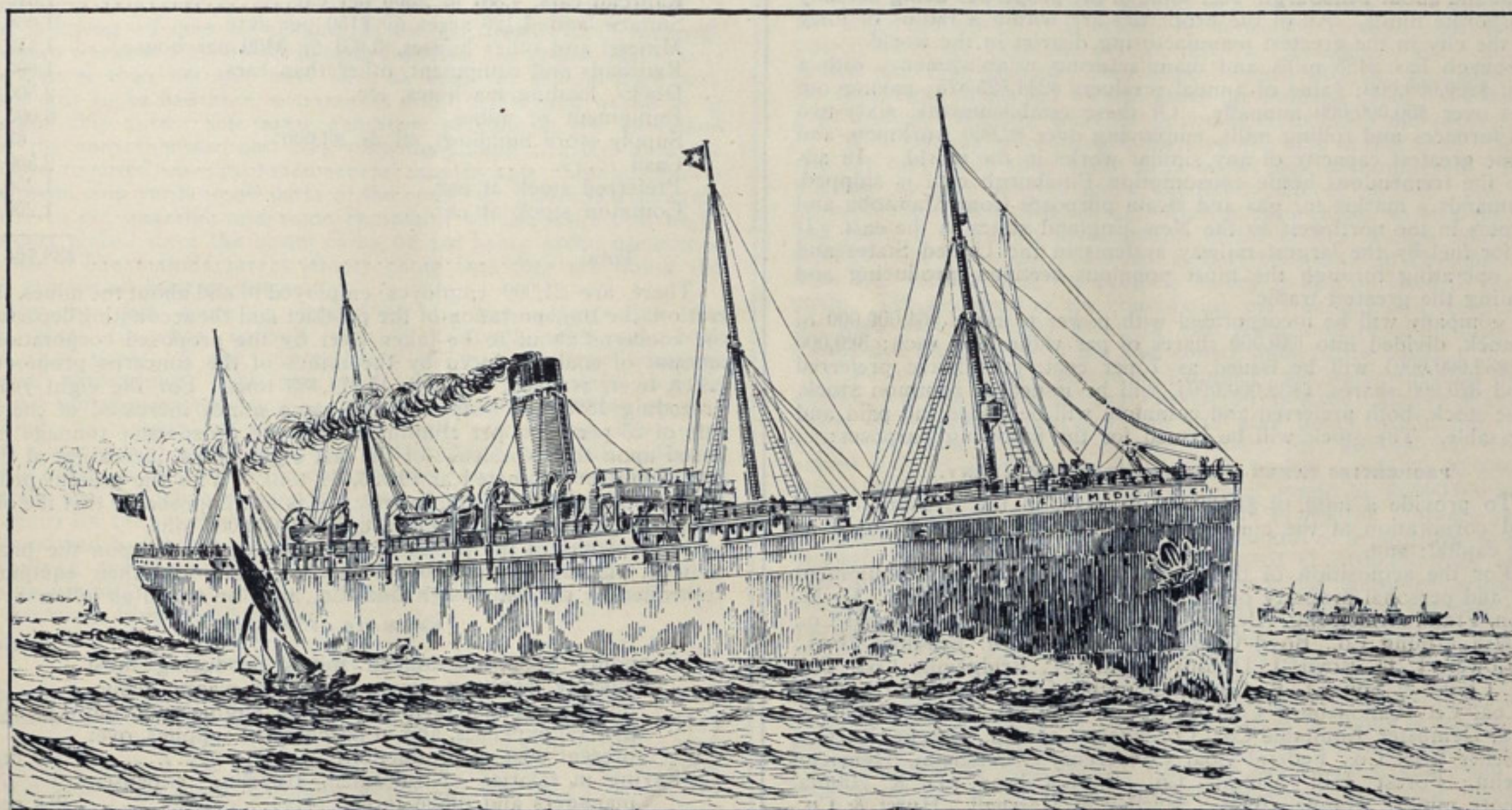
The Review has several times of late printed extracts from British technical journals illustrative of the degree of apprehension with which it is very evident engineering circles on the other side of the Atlantic have come to regard the progressiveness recently manifested by American ship builders. Viewing this same subject editorially the New York Sun says:

"The near future of the ship building industry in England is a subject of some solicitude in that country. For the moment the business is on the top wave of prosperity, and the various other industries depending on it are enjoying their share; but how long it is going to last is a question that is exercising the minds of a good many people besides ship builders. It has been stated recently in regard to the yards on the Clyde, which are the leading establishments in Great Britain, that though work is at present abundant, new orders are becoming rare. Should this state of things continue, a decline in the steel and iron industries and in engineering work must follow. One explanation is that the high prices at present ruling make ship owners cautious about giving new orders, unless compelled to,

A RAFT OF 11,000 PILES.

Reference has been made in these columns to an immense pile raft that has been under construction for several months past at the West Seattle works of the Robertson Raft Co. The structure is now ready for launching from its cradle and will at once be towed down the Pacific coast by the steamer *Czarina* to San Francisco where it will be offered for sale. Other pile rafts have been launched and taken to sea from the Puget sound district, but they were all smaller than this one, which is 625 feet long, 55 feet beam and 38 feet deep, drawing 24 feet of water. Eleven thousand piles compose the hull and cargo. Work will be commenced on another raft within two or three weeks, as it is the intention to keep the Robertson works in permanent operation and by next summer it is hoped to have sent three or four others to San Francisco.

This raft structure has all the shape of a whaleback, pointed at each end, with hull outlined and built to swim the seas with the safety and buoyancy of a sailing vessel, and with a rudder and canvas would probably make fair progress on its own account. These 11,000 piles, averaging 60 feet in length, mean 660,000 lineal feet, or eleven times the pile cargo of a fair-sized sailing ship, and are taken to their destination with average safety and without the expense of employees. The only cost of making and marketing the raft is the cradle, the dozen or so employees for three months, the 5,000 feet of chain that holds the piles together in their original form and the towing to San Francisco. The cost of the entire structure, including the cradle, will not much exceed \$5,000. The chains wrapping the hulk are 2 inches in diameter, and placed 6 feet apart from end to end, interwoven and bound so that the raft is very strong, and nothing but the severest storms can break it up. Work was commenced loading this craft last spring, and proceeded more slowly than usual on ac-



THE MEDIC, PIONEER SHIP FOR NEW SERVICE OF WHITE STAR LINE TO AUSTRALIA AND TASMANIA FROM LIVERPOOL.

for if a time of depression were to come it would result seriously to those who had paid the existing high rates. Then the price of coal in England has risen, and the cost of repairs is greater. But freight rates are high with a tendency to improvement, and the demand for tonnage is considerable. To make a dividend on a ship, however, that has cost, say, half more than the normal price, is a difficult matter, and owners are cautious about giving fresh orders. Another reason is that German, French, Dutch, Italian, Norwegian and our American ship builders are all exceptionally busy. This means that the over-sea carrying trade will no longer be almost a monopoly of the British flag, and therefore calls for caution on the part of British owners. The continuance of the existing activity in British ship building yards is, for these reasons, not looked for much beyond the end of the current year, though it is hoped that circumstances may arise rendering new orders necessary.

"The foregoing observations have reference only to the merchant marine. The case is different with the business of building war vessels for the navy. The peace conference having separated without passing any resolution on disarmament, the British government has decided to spend the \$40,000,000 voted for naval construction at the time the Russian naval programme was announced. Thus the warship builders have work assured to them for some time. In his speech introducing the naval works bill last month, Mr. Austen Chamberlain, in order to show the necessity for increased dock accommodation, stated that whereas, in the year ending March 31, 1889, the tonnage of the vessels built and building for the Royal navy was 864,000 tons, on March 31 of this year it was 1,800,000 tons; more than double that of ten years ago. The longest battleship then was 345 feet long and the largest cruiser 400 feet. Now battleships of 400 feet in length are being built and there are cruisers 500 feet long in commission. This naval programme adds, of course, to the activity in the ship building yards, but as it cannot be reckoned a permanent condition, it has to be eliminated from the estimation of the prosperity or soundness of the regular mercantile industry. That, as has been shown, is just now on an uncertain basis, owing to the development of the mercantile marine of other countries, more particularly our own."

count of the newness of the apparatus and the difficulty at first of getting enough piles.

A similar raft of 600 feet length, belonging to the same company, was launched at Stella on the Columbia river, a few days ago, and will be started on its voyage down the coast about the same time as the West Seattle raft. Capt. H. R. Robertson is the pioneer and inventor in this method of taking piles to market. He started in business on the Atlantic coast fifteen years ago, and learning of the immense quantity of piles on the Pacific coast went to Northern California, then to the Columbia river, and now has established permanent headquarters at West Seattle.

ELECTRICALLY PROPELLED FERRY BOATS.

Electrical engineers have repeatedly claimed that there is a promising field for electrical propulsion in ferry boats, and now it is said that electrically-propelled ferry boats will soon be placed in operation on the Delaware river between Philadelphia and Camden, N. J. The steam ferry boat is generally worked under conditions that make it almost impossible to show high efficiency, especially when the course of the boat is short. The fires must burn while the boat is standing at either end of its journey and while it is making half speed. It must be provided with engine and boiler capacity for its highest speed, and these can only be used a part of the time. With an electrical equipment the charging may be done while the boat is in its slip at the end of each trip. Batteries worked near their full charge limit are highly efficient, and such boats may be expected to show a considerable saving in coal, but this is by no means all that will be gained by displacing their steam machinery with accumulators and motors. All space on the main and upper decks required for working beams, smoke stacks, etc., will be saved, attendance will be lessened, vibration diminished and the control gear put in the pilot house, so that the steersman may also operate the motors. In this way the boat will be under perfect control, without the possibility of a misunderstanding in signals between the pilot and engine man.

PITTSBURGH COAL COMPANY.

CONSOLIDATION OF PITTSBURGH DISTRICT COAL INTERESTS, AS WELL AS SOME OF THE DOCK PROPERTIES OF LAKE ERIE AND LAKE SUPERIOR IN A CORPORATION OF \$64,000,000 CAPITAL.

Full particulars of the organization of the Pittsburgh Coal Co., which is to take over some 81,000 acres of coal lands in the Pittsburgh district, as well as several small lines of railway, about 4000 coal cars and also a large part of the important dock interests on both Lake Erie and Lake Superior, are contained in a prospectus just issued by Moore & Schley of New York and Geo. B. Hill and Co. of Pittsburgh, who are financing the consolidation. Although the capital is to be \$32,000,000 of preferred and \$32,000,000 of common stock, the leading representatives of coal interests in Cleveland, who control large properties in the Pittsburgh district, say that the consolidation is on a scale so conservative that the stock will certainly be subscribed for three times over. The prospectus is in full as follows:

It is proposed to incorporate the Pittsburgh Coal Co. under the laws of the state of New Jersey, with corporate powers and authority to take over, own, manage and operate the properties, plants, machinery and equipment of the several concerns hereinafter named, as well as all of the subordinate and contributory corporations, incorporated under the laws of the states wherein its corporate operations are carried on, for the purpose of enabling it, in the broadest and most liberal way, to hold and enjoy a vast and profitable coal and coal mining property. These coal lands and mines which will constitute the property of the corporation, are situated in and about Pittsburgh, Pa., some of the properties being actually in its corporate limits. All of the properties are within a radius of forty miles of the city in the greatest manufacturing district in the world.

Pittsburgh has 2483 mills and manufacturing establishments with a capital of \$200,000,000; value of annual products \$244,525,875; paying out in wages over \$60,000,000 annually. Of these establishments, sixty-two are blast furnaces and rolling mills, employing over 82,000 workmen, and having the greatest capacity of any similar works in the world. In addition to the tremendous home consumption Pittsburgh coal is shipped, and commands a market for gas and steam purposes from Manitoba and the Dakotas in the northwest to the New England states in the east. It is used for fuel by the largest railway systems in the United States and Canada, operating through the most populous sections, producing and necessitating the greatest traffic.

The company will be incorporated with power to issue \$64,000,000 of capital stock, divided into 640,000 shares of par value \$100 each; 320,000 shares (\$32,000,000) will be issued as 7 per cent. cumulative preferred stock and 320,000 shares, (\$32,000,000), will be issued as common stock. All of the stock, both preferred and common, will be issued full paid and non-assessable. The stock will be issued for the following purposes:

PROPERTIES TAKEN OVER BY THE NEW COMPANY.

1. To provide a fund of \$2,500,000 in cash, in the treasury of the proposed corporation at the commencement of business, to be used as working capital; and,

2. For the acquisition of the mines, plants, machinery, equipment and real and personal property of the following named concerns: D. M. Anderson, Frank Armstrong, Alex. Black Coal Co., Lim., Blyth Coal Co., Bower Hill Mining Co., Boyd Coal Co., N. H. Boyd, Beadling Bros., J. W. Blower, J. D. Boyd, J. D. Boyd Coal Co., Bridgeville Coal Co., J. V. H. Cooke & Sons, J. B. Corey, Columbia Gas Coal Co., Chartiers Block Coal Co., Canonsburg Coal Co., J. E. Douglas, W. L. Dixon & Co., Alex. Dempster, Equitable Coal Co., Essen Coal Co., Eureka Coal Co., Co., Fidelity Coal Co., Federal Coal Co., Henry Floersheim, Henriette Floersheim, Forest Hill Mining Co., S. A. Gibson, D. R. Hanna, (Creedmore mine), Hanna Bros., Hartley & Marshall, Hurst & Co., Imperial Coal Co., L. S. Johns, Johnston Coal Mining Co., Keeling Coal Co., Laurel Hill Car & Coal Co., Lake Superior Coal Co., A. W. Mellon, et al, Mingo Gas Coal Co., Midway Block Coal Co., M. McCue & Co., J. A. McCready, Morgan, Moore & Baine, Morris & Newell, Moon Run Coal Co., Montour R. R. Co., O. McClintock, W. L. McClintock, Estate of Washington McClintock, Millers Run Mining Co., Nathaniel Holmes, National Coal Co., New York & Cleveland Gas Coal Co., J. E. Newell, Northwestern Coal Railway Co., Oak Ridge Coal Co., Lim., Osborne, Saeger & Co., The Panhandle Coal Co., Penna. Title & Trust Co., Assignee, Pittsburg Consolidated Coal Co., Pittsburg, Fairport & Northwestern Dock Co., Pittsburg & Chicago Gas Coal Co., Provident Mining Co., Pittsburg & Western Coal & Coke Co., E. W. Powers, Pittsburg Block Coal Co., Port Royal Coal & Coke Co., Port Royal Dock Co., Pittsburg & Moon Run R. R. Co., Robbins Coal & Coke Co., Robbins Coal Mining Co., F. L. Robbins, Isaac I. Robertson, W. P. Rend, Jacob E. Ridgeway, Redstone Oil, Coal & Coke Co., Ridgeway-Bishop Coal Co., Slope Mine Coal Co., W. J. Steen, (O. I. C. mine), Saw Mill Run Coal Co., The Shepler Gas Coal Co., Shire Oaks Coal Co., J. H. Somers Fuel Co., J. D. Sauters, Jesse H. Sanford, Waverly Coal & Coke Co., Warner Coal Co., J. H. White, Assignee, Willow Grove Mining Co., H. K. Wick, Wick Haven Supply Co., H. K. Wick, C. B. Wick and Frank Morrison, (Youghiogeny & Wick Haven R. R. Co.), Webster Gas Coal Co., R. H. Williams, Walsh-Upstill Coal Co., Youghiogeny & Lehigh Coal Co., Youghiogeny Mining Co., The Youghiogeny Gas Coal Co., Youghiogeny River Coal Co.

There will be deposited in the treasury in addition to the \$2,500,000 cash for working capital at least \$1,200,000 of preferred stock, and at least \$1,200,000 of common stock for the acquisition of additional property and plant and the general purposes of the corporation.

SOME DOCKS ON LAKE SUPERIOR AND LAKE ERIE.

Included in the assets of the concerns named above as proposed to be taken over are 81,236 acres of coal land, and 7,126 acres of surface land, situate in the counties of Allegheny, Fayette, Washington and Westmoreland, in the state of Pennsylvania, on the lines of the Pennsylvania railroad, the Baltimore & Ohio system, the lines of the Pennsylvania Co. and

those of the Pittsburgh & Lake Erie and Pittsburgh & Western Railroads, with direct connection with the following dock and loading plants, which are to be acquired by the proposed corporation as a part of the assets of the concerns taken over: Docks and loading plants of the Northwestern Coal Railway Co. at Duluth, Minn.; Youghiogeny and Lehigh Coal Company at Chicago, Ill., and West Superior, Wis.; Pittsburgh & Chicago Gas Coal Co. at Cleveland and Thornburg, O.; Pittsburgh, Fairport & Northwestern Dock Co. at Fairport Harbor, O.; West Superior & Duluth Dock Co. at Duluth, Minn.; Port Royal Docks, Sault Ste. Marie, Mich.; Moon Run Coal Co. and Youghiogeny River Coal Co., Ashtabula, O.; and loading machine of Erie Transfer Coal Co. at Cleveland. In addition to the railroad and dock facilities above mentioned, there are included in the assets of the concerns to be taken over, the five following railroads, which are fully equipped, viz.: Montour Run railroad, Moon Run railroad, the railroad of the New York & Cleveland Gas Coal Co., Youghiogeny & Wick-Haven railroad and the Northwestern Coal Railway Co. Transportation facilities for the product of the proposed company, so far as reaching the market of the east, west and northwest, may be regarded as the best in existence, the proposed corporation having at the commencement of its business over 4,000 railroad cars, now the property of the concerns whose assets are to be taken over, together with seventeen locomotives, being operated on the railroads controlled exclusively by it. The appraisements and close estimates place the following valuations on the assets proposed to be taken over:

ASSETS TO BE TAKEN OVER BY THE NEW COMPANY.

Coal in fee, 81,236 acres @ \$250 per acre.....	\$20,309,000
Coal on lease, 3,774 acres.....	
Railroad cars, 4,387 @ \$300 per car.....	1,316,100
Surface land, 7,126 acres @ \$150 per acre.....	1,068,900
Miners' and other houses, 3,631 @ \$400 per house....	1,452,400
Railroads and equipment, other than cars.....	1,000,000
Docks, loading machines, etc.....	2,500,000
Equipment of mines.....	6,095,130
Supply store buildings, 21 @ \$3,000.....	63,000
Cash.....	2,500,000
Preferred stock at par.....	1,200,000
Common stock at par.....	1,200,000
Total.....	\$38,704,530

There are 21,000 employees employed in and about the mines, their operation, the transportation of the product and the accounting departments of the concerns about to be taken over by the proposed corporation. The amount of coal produced by the mines of the concerns proposed to be taken over, reached, in 1898, 15,274,433 tons. For the eight years next preceding 1898, the output of the same mines increased at the average rate of 25 per cent. per annum, so that the prospective tonnage for 1899, based upon the experience of the last eight years, increasing at the same rate, could be estimated at 19,093,041 tons. With the present prosperous times in the manufacturing interests, it is not improbable that the output of the mines, in 1899, will be upwards of 20,000,000 tons.

The profits of the proposed corporation, based upon the production of 1898, viz., 15,274,433 tons, when the plants and their equipment are controlled by the Pittsburgh Coal Co., may be stated as follows:

ESTIMATE OF PROFITS.

	Per ton.
Economy of production at mines producing most cheaply, shutting down expensive plants, reducing cost of management, mining engineering and general expenses, and in purchase of supplies, over present cost of production.....	10 cents.
Saving in salaries of salesmen, traveling expenses, managers and office force.....	2½ cents.
Estimated present average profit, exclusive of royalty.....	7½ cents.
Increased market value of product over values realized in 1897-8, by reason of increased demand, consumption, etc.....	10 cents.
Total.....	30 cents.
Estimated profits on coal production.....	\$4,582,329.90

(Note: The first cost of run of mine coal in the ground, estimating the average yield per acre, run of mine coal, from both thick and thin veins at 7,500 tons, and the value per acre at \$250, is 3 3-10 cents per ton. The royalty cost of coal based on 15,274,433 tons produced in 1898 at 3 3-10 cents per ton, would be \$504,056).

Appropriate from profits on coal, the royalty estimated above to maintain coal acreage.....	504,056.00
Net profits on coal based on the tonnage of 1898....	4,078,273.90
Profits from rentals of houses.....	217,740.00
Purchase and sale of supplies.....	575,000.00
Car mileage.....	210,576.00
Dock earnings.....	332,500.00
Total.....	\$5,414,089.90

This sum, \$5,414,089, which would be the prospective net income of the proposed corporation, after having provided for the acquisition of coal equal in quantity to that mined in 1898, would be available for dividends, surplus, etc., as follows:

Dividends, 7 per cent. per annum on \$32,000,000 preferred stock.....	\$2,240,000
Dividends, 9 per cent. per annum on \$32,000,000 common stock.....	2,880,000
Surplus Fund.....	294,089
Total.....	\$5,414,089

The preferred stock will be offered for subscription at par, payable in

cash; each subscriber on allotment on subscription will be entitled to 70 per cent. of his allotment in common stock as a bonus.

MANAGEMENT AND HEADQUARTERS.

It is noted in the underwriting agreement, or the agreement to which stock subscriptions are to be affixed, that the 7 per cent. dividend on the preferred stock is to be cumulative; that is to say no dividends are to be paid on the common stock until a dividend shall have been paid on the preferred stock at the rate noted, but after the preferred stock dividend shall have been earned and appropriated, dividends may be declared and paid on the common stock. The preferred stock dividend is not to exceed 7 per cent. per annum, but any amount earned in excess of this 7 per cent. may be paid on the common stock. Subscribers to the preferred stock will receive 70 per cent. of the aggregate amount subscribed for by them in shares of common stock at the par value of \$100. The individuals, firms and corporations selling out to the consolidation will, of course, be given stock instead of cash for their property, at least to a certain degree, if they desire it. The new organization will certainly be effected within the next ten days and men now controlling this coal business will undoubtedly be retained in the management. As yet nothing definite has been made public regarding the officers, although it is not at all probable that such a big undertaking would have progressed to the point of actual payment for the property without the principals in the management being agreed upon. The headquarters of the consolidation will very probably be in Pittsburgh.

GREAT SCARCITY OF SHIP MATERIAL.

The Cramp ship yard at Philadelphia is not the only works of its kind that is laying off men on account of the great scarcity of material. At the Lorain works of the American Ship Building Co. (consolidated lake yards) not more than 200 men have been at work for several days past. If material was to be had as it is required, about 1,200 men would be at work in this ship yard. The same condition prevails at the Cleveland works of the consolidation, and this notwithstanding the fact that the material now required was purchased several months ago. Similar reports are heard from ship yards in all parts of the country. There is a struggle everywhere to get material, and some complaint on the score that high-priced orders placed since the boom came on are being given preference by the mills. The manufacturers simply claim that they are doing the best they can for all their customers.

It may be that there is something in the report that the Carnegie Steel Co. has entered into a contract with the consolidated ship yards of the great lakes to furnish large amounts of material throughout 1900 and 1901, at current prices, but it is, of course, not possible to secure positive information regarding rumors of this kind. If it were not for the very high prices that now prevail, such a transaction would not be at all surprising, as it will undoubtedly be the policy of the lake combination to not only buy its material on a large scale, and for delivery extending over long periods, but also to so plan its affairs for the future that ships will be put down without contracts in both good and bad times and sold when they can be disposed of to the best advantage, thus insuring steady operation of the principal works, which is an important factor in the management of a large organization like the American Ship Building Co.

LARGE SUCTION DREDGE.

Bids will be opened Aug. 28 at the United States engineer office, Charleston, S. C., for the construction of the United States suction dredge General Marion. The act of congress for the construction of this vessel was approved March 3, the appropriation being \$150,000. The General Marion will be a large wood hydraulic dredge 200 feet long over all, 185 feet long between perpendiculars, 40 feet moulded beam, 40 feet 10 inches extreme beam and 20 feet depth of hold. She will have two 18-inch sand pumps, worked by horizontal compressed tandem engines, 15 and 30 inches diameter of cylinders and 18 inches stroke. The pumping plant is separate in every respect from the propelling plant. Two large Babcock & Wilcox or Niclaus water tube boilers will furnish steam for the sand pumps at 125 pounds pressure. The propelling engine is a compound, with cylinder of 24 and 48 inches diameter by 30 inches stroke. Steam for this engine will be supplied by two steel Scotch boilers, 13 feet diameter and 12 feet long at 125 pounds pressure. There are two surface condensers, one with 2200 square feet of cooling surface and the other with 1000 square feet. The auxiliaries will be very complete and they include steam winches, steam windlass and capstan and an 8-kilowatt, 110-volt electric generating set.

Dispatches from New York, a short time ago, were to the effect that the Cramps of Philadelphia were about to establish a ship yard on Shooter's island, at the mouth of Newark bay, between Elizabethport and Bergen point. The reports were positively denied by officials of the Cramp company. Now it is announced that the island had been purchased by Townsend & Downey, who own a ship yard in Brooklyn, and that their plant will be established and greatly enlarged on the property. The island is thirty acres in extent and is very advantageously located. New York offices of Townsend & Downey are in the Produce Exchange building, Broadway.

Lewis Nixon has a strike at his Elizabethport (N. J.) ship yard that took a strange ending. After the men, who are to a large extent members of a union of ship builders, iron workers and boiler makers, had been out for several days they concluded that they had no real grievance, but still they were being urged to remain out by New York leaders of the union. They bolted the union, or at least the leaders of the general organization, and went back to work. Very probably there was a little Nixon ingenuity back of the change of feeling on the part of the men.

A dispatch from Newport News says that if the unexpected does not happen, the battleship Kearsarge will be ready for her trial trip Sept. 5. She is nearing completion and the finishing touches are being put on at a rapid rate. The Kentucky will have her trial trip about a month later.

RAILWAYS OPPOSED TO THE CANAL.

WARNER MILLER SAYS THE TRANSCONTINENTAL LINES ARE THE OPPONENTS OF THE NICARAGUA PROJECT—FIGURES REGARDING COST AND COMMERCE OF THE PROPOSED BIG CANAL.

In the course of a general interview in Chicago, a few days ago, former Senator Warner Miller of New York talked in a very interesting way regarding the big Isthmian canal project from his standpoint as promoter of the Maritime Canal Co. Mr. Miller referred particularly to the statement made by Statistician Nimmo in a recent magazine article, to the effect that the Nicaragua canal would not pay interest on its fixed charges if it were built and operated.

"Mr. Nimmo is an able statistician, with much information to draw from, but he makes his statistics to suit his employers," said Mr. Miller. "I say this advisedly, for I know what I am talking about. The transcontinental railroads have steadily fought the Nicaragua canal project. They have said they would defeat it, and they delay the project as much as possible. Twice the senate has passed bills authorizing the building of the canal, but somehow these bills could not pass the house. The transcontinental railways maintained expensive lobbies at Washington, and the house each time decided on further investigation before passing the bill. For the Walker commission, appointed by President McKinley, \$260,000 was appropriated, and the commission reported that the plan was entirely feasible, and that the cost ought not to exceed \$118,000,000. One of the commissioners thought the canal could be built for \$90,000,000.

"Then the senate passed another bill authorizing the construction of the canal, but while it was before the house the Panama canal people appeared here—an infamous nest of thieves. You know the scandal connected with that project. They came forward with the plea, 'Don't build the Nicaragua canal, and we will finish the Panama canal. We don't want your money. We only want the opportunity to finish our project.'

"I do not say who brought those people here at that time. Some one did, for they went away when their object was accomplished. They did not take up their project again, but finally offered to sell out to the government. Then congress authorized a commission to visit the isthmus and make a thorough investigation of all known routes, appropriating \$1,000,000 for the work. This had already been done in President Grant's term, but \$1,000,000 of the people's money is appropriated to do it over again. The members of the commission met recently and concluded that the work would occupy them for two years, and possibly three, which means that much delay in the final construction of the canal.

"To any man well posted in shipping, the statement that the canal when completed would not pay interest on its fixed charges is absurd. I know of reliable contractors who will give bonds to do the work for \$100,000,000, and the bonds of the company for \$100,000,000 could be placed at 3 per cent., so that the annual interest would be \$3,000,000. A liberal cost of the maintenance of the canal would be \$1,000,000 annually, so the fixed annual charges would be about \$4,000,000. Twenty years ago the government made an estimate of the amount of freight that would pass through such a canal, and it was estimated at 5,000,000 tons annually. That was twenty years ago, and commerce has increased greatly since then, but even at that estimate the canal would pay from the date of opening. The charges for freight going through the Suez canal are about \$2 per ton. At that rate the receipts of the Nicaragua canal, based upon a tonnage of 5,000,000, would be \$10,000,000, or \$6,000,000 above the fixed charges. But the opening of the Nicaragua canal would mean an immense increase in the commerce of the United States. It would bring our eastern ports about 2,000 miles nearer Japan and the Chinese coast, as far as Hong-Kong, than English and European ports, and would mean a great increase in our Oriental trade and in the tonnage passing through the canal.

"The greatest benefit would accrue to the Pacific coast. The states of California, Oregon, and Washington are naturally the richest in the United States, but with 1,500 miles or more of extent along the Pacific coast, they have fewer inhabitants than the city of Greater New York. Five years after the Nicaragua canal is opened there will be from 10,000,000 to 15,000,000 people on the Pacific coast instead of 2,500,000, and commerce will increase proportionately.

"Canals create commerce. When the Suez canal was first opened it brought meager returns, but commerce was developed by its advantages until now between 16,000,000 and 18,000,000 tons of freight pass through it annually. It pays from 18 to 20 per cent. premium annually and its stock is now at 740 per cent. premium in Paris. A few years ago the Sault canal of Michigan was a little log canal, capable of floating vessels of only 500 tons, and 500,000 tons of freight a year was its best record, but the government put in a large canal, and people emigrated into the tributary country until now a tonnage of from 15,000,000 to 20,000,000 passes through that canal every year. If the canal had not been put in, the country would not have been developed. So it will be with the Nicaragua canal. It will create commerce, and there is no more question of its paying than that it paid to throw open the great lakes to commerce or to build railroads between Chicago and the east."

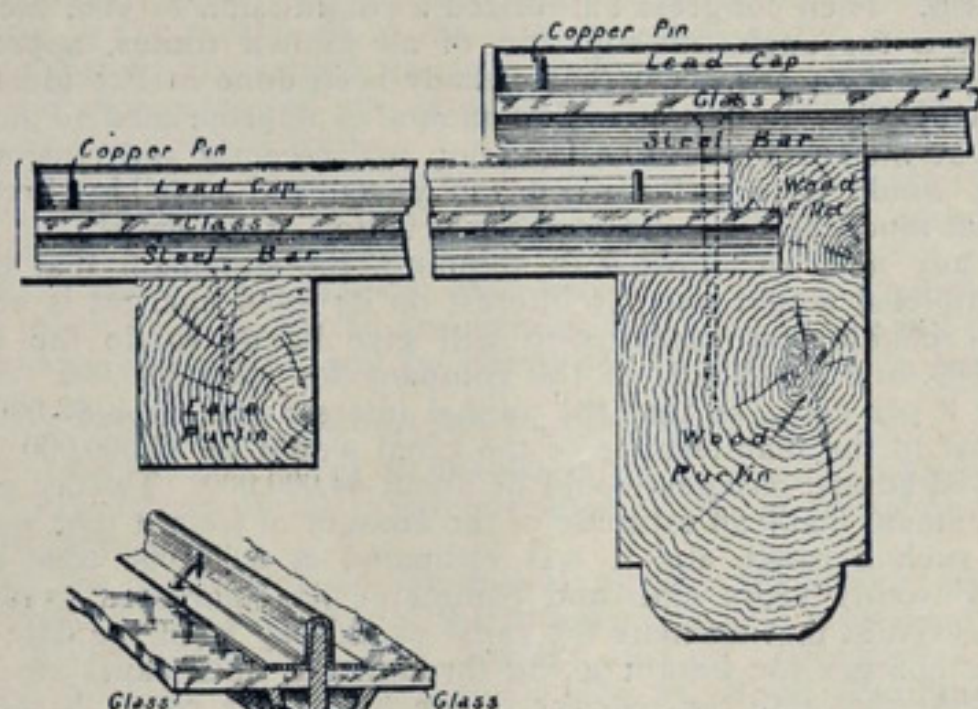
The three-masted barge, No. 18, for the Consolidated Coal Co. of Baltimore, was launched Saturday afternoon, Aug. 19, from the yard of Kelley, Spear & Co., Bath, Me. Capt. A. B. Mills, representing the owners, has superintended the construction of the vessel. The barge measures 189 feet 3 inches long, 35.1 feet beam, and 18.1 feet deep, and her tonnage is 913 gross and 817 net. She has an outfit of first-class ship machinery, made by the Hyde Windlass Co. of Bath, Me. This vessel is the twelve barge that the firm of Kelley, Spear & Co. have launched this year.

A contract for two new blast furnaces, to cost together about \$1,500,000, has been placed with the Riter & Conley Mfg. Co. of Pittsburg by the American Steel & Wire Co. One of these furnaces will be built at the Cleveland Rolling Mill works and the other will adjoin the Edith furnace in Allegheny. Work on the new furnaces will begin in about two months and it is hoped they will be in operation within a year.

SHIP BUILDING SHEDS.

THE STRUCTURES FOR THE PROTECTION OF VESSELS BUILDING AT THE YARD OF SWAN & HUNTER, AT WALLSEND-ON-TYNE, ENGLAND.

So much interest has been manifested by American ship builders in the covered sheds provided at the works of Swan & Hunter, Wallsend-on-Tyne, for the protection of vessels under construction that a fuller description than has been embodied in previous reference to these works in the Review will doubtless prove acceptable. Two sheds were erected by the company over two of its slips, and it was decided to roof these in, because it had been found that the work of ship building proceeds very much more rapidly under cover than it does when there is no protection of any kind. In order, however, that there might be sufficient light to work by, it was necessary that these buildings should be glazed, roof and sides. The illustration shows the system used. It consists of steel bars provided with two channels or gutters, one each side of a central vertically projecting division piece. These are placed 1 foot apart, being secured by screws to wood purlins, and are so arranged that in each successive tier they are placed centrally over one another, a screw passing through the center of each, and fastening both to the purlin. The advantages claimed for this method are that every single pane of glass used in either of the roofs can be removed and replaced from the underside, should this become necessary at any time by breakage or other reason, thus obviating the necessity of using outside side scaffolding. As shown in the illustration, the steel glazing bar is provided with the two gutters, which form the ledges for the glass to rest upon. The lower ends of the bars are turned up, forming a stop against which the glass rests and is prevented from slipping down. A lead cap fits over the division piece of the steel glazing bar when the glass is in place, and is secured to the bar by means of copper pins placed 9 inches to 10 inches apart, and passing through holes in both the cap and the bar. The ends of these copper pins are bent downwards until they rest upon the lead cap. This, while making a perfectly secure fastening for the glass, has a certain amount of spring in it, which is said to permit of expansion and contraction of the structure of the roof without damage to the glass,



SYSTEM OF GLAZING.

and to have proved successful with these two roofs, which cover buildings over 500 feet long, 71 feet wide, 80 feet high to the eaves, and 100 feet high to the apices. In the arrangement just described the tiers of glass are, of course, separated by a distance equal to the height from the top surface of the lower glass plate to the top of the lead cap, plus the distance between the under side of the upper glass plate and the bottom of the steel glazing bar, as the bottom of the latter rests on the top of the former. This space, unless filled up, would allow the entrance of rain, snow, etc. It is therefore filled up with a removable wood fillet, which, while easily fixed or taken away, satisfactorily blocks the opening when in position. The sheds themselves are all composed of angle and T iron.

There are five electric cranes—four just underneath the roof and one above the roof, the former weighing 15 tons each and the latter some 20 tons—for lifting and transporting the plates and other heavy materials used in the construction of the ships. The crane working above the roof is of the cantilever form, and has a capacity of $2\frac{1}{2}$ tons. It was built by Thomas Broadbent & Sons, Limited, of Huddersfield, and consists of four main portions; the carriage or underframe, carried on standards 80 feet from the ground level, and forming the side of shed; the central tower, built directly over the underframe; the long cantilever, projecting 70 feet, from the center of the tower, over the slipway; and the short cantilever, projecting 33 feet, also from center of tower, over the roof of shed, and forming a back balance or counterpoise. The whole of the underframe and superstructure of the crane is constructed of steel, and made up of H beams, channels, angles, steel tubes, stay rods, and steel wire cables 1 7-16 inches diameter. The structure is stiffened and braced on each face of the tower by steel angles and gusset plates, and also both cantilevers horizontally; while the cross-section of the cantilevers is braced by steel tubes and tie rods. The underframe is also diagonally braced by steel angles and gussets. A track is formed for the hoisting bogey by H steel beams carried on steel hangers from the cross beams of the long cantilever. The position of the electric motor and the arrangement of the drives are such that the weights are so distributed that under no conditions of load is a greater upward or downward pressure than 1,000 pounds transmitted on to the roof principals through the guide rollers at the end of the short cantilever.

The electric motor runs at 700 revolutions per minute, driving the main countershaft at 400 revolutions, and from this the various drives are taken, the hoisting by means of steel bevel and worm gear on to a cast iron drum 38 inches diameter, grooved for 9-16 inch steel wire rope; the traversing of the hoisting bogey by spur gear on to a 24-inch cast iron drum carrying a $\frac{3}{8}$ -inch steel wire rope; the traversing of the whole structure by spur and worm gear on to carriage axles up an incline of 1 in 50

with full load. The levers for manipulating the various belt drives are assembled in a cabin on the front face of the tower overlooking the long cantilever and commanding a full view of the load in all positions. The whole of the working parts are boarded in and roofed over with corrugated galvanized iron sheets as protection from the weather.

BRITISH CRITICISM OF OUR NAVAL ADMINISTRATION.

The policy of dividing responsibility for the sea transportation of United States troops between the army and navy departments, instead of placing it entirely within the jurisdiction of the navy department as is done in Great Britain, has given rise from time to time to considerable dissatisfaction and one or two clashes of authority. There seems to have been a general disposition on the part of both army and navy officers to regard each other as intruders in this matter of transport service. Capt. S. S. Long, assistant adjutant-general, British navy, stationed at Hong Kong, China, reviews from a critical standpoint, in an article contributed to the Journal of the United Service Institution in India, the whole scope of American operations in the Philippines, and incidentally he had laid certain strictures against the management of that portion of the initial expedition which he understands to have been under the jurisdiction of the navy department. Whether this latter premise was justified by actual facts is necessary of determination before much value can be placed upon the judgment pronounced by Capt. Long. The British officer says in part:

"A noticeable feature of the expedition was the apparently absolute ignorance of the admiralty and navy as regards their duties towards the army. The army chartered, superintended the fitting, equipping and coaling of all transports, with the result that when they proceeded to sea, they discovered that in some instances they were badly or deficiently found; and, after arrival at Manila, it was noticed that the chief quartermaster was occupied with questions regarding the coaling and detention, etc., etc., of transports more than with the necessities and requirements of the army. The landing of the troops and stores cannot be too adversely criticised. After the destruction of the Spanish fleet and the capture of Cavite on May 1, all steam vessels, launches, boats and lighters that remained afloat fell into the hands of the American navy, and as they were blockading an enemy's port, the captured launches were extremely useful for patrolling purposes, etc. No steps appear to have been taken by the navy to sound and buoy the best landing places for troops. On their arrival, for two days some assistance was rendered to land a portion of them, but after that they were left to their own devices to do the best they could, having as means of transport an old paddle-wheel river steamer and two or three worn out cranky launches, with a few crazy boats and lighters. No naval transport officer was appointed, and, as a result of this lack of professional assistance, the troops suffered greatly in landing, and a quantity of valuable stores was lost in being brought ashore through the heavy surf. In this way the whole of the ammunition for the Astor Battery was lost, and although a portion was afterwards recovered, this battery was rendered practically useless till the day before the fall of Manila. The work thus thrown on the army would, had they had an enterprising enemy, have certainly led to disaster."

EASTBOUND SHIPMENTS FROM CHICAGO.

[FROM BLUE BOOK OF AMERICAN SHIPPING.]

During seven years past lake vessels have carried in the navigation season (May to November, inclusive) an average of 58 per cent. of all freight moved eastward from Chicago. In the following table, made up from reports of the Chicago board of trade, the business of ten trunk lines running eastward from Chicago is compared with business taken out of that city by lake vessels:

SEASON OF	Moved by lake.		Moved by rail.		Total. Net tons.
	Amount. Net tons.	Per cent.	Amount. Net tons.	Per cent.	
1898.....	3,821,236	60.6	2,479,634	39.4	6,300,870
1897.....	4,047,521	66.3	2,057,319	33.7	6,104,840
1896.....	3,272,115	61.7	2,029,160	38.3	5,302,115
1895.....	928,001	33.7	1,817,642	66.3	2,745,643
1894.....	570,584	62	348,333	38	918,917
1893.....	3,187,622	63.3	1,846,128	36.7	5,033,750
1892.....	3,052,014	58.7	2,145,180	41.3	5,197,194

Frank S. Witherbee, a member of the canal advisory board of New York, who is now inspecting Belgian canals, writes home as follows: "Bruges is the junction of six separate canals, so you can see what a network there is of them. They are also building several new ones, notably the ship-canal from the sea to Bruges, which is the same size as the Suez canal. They are using for the first time in Belgium the lateral gates to the locks and expect to construct all new gates that way. The ones at the seaport near Bruges are worked by electricity. The pneumatic lock at La Louviere is much like the one Dutton proposes for Cohoes. The Belgian officials have all been very courteous and I am bringing home several very interesting official documents bearing on their internal navigation."

It is claimed that the new yard of the New York Ship Building Co. at Camden, N. J., will be the largest in the world. It will comprise more than 125 acres. At present 200 men are engaged in the preparation of the grounds for the erection of the nine brick and iron buildings.

Mr. Edwin S. Cramp recently made the prediction that if the Hanna-Payne bill were passed by congress there would be sufficient ship building in the country to keep every plant in the United States busy for at least five years to come.

The veterans of '61 hold their annual encampment at Philadelphia. The Nickel Plate road offers special low rates for this occasion. Tickets sold Sept. 1 to 4 inclusive, good for stop-over privilege at Niagara Falls without extra charge. See agents. 117, Sept. 4.

PNEUMATIC TOOLS IN FOUNDRIES.

In the foundries, as in other branches of the iron industry, compressed air is being used more extensively every day. It is applied to cranes, hoists and elevators of every kind, to the operation of molding machines, sand blast machines, chipping and calking tools, sand sifters, pig iron breakers, etc. One of the latest tools of this kind for foundry work is the Cramp pneumatic rammer, named for the inventor, Joseph C. Cramp of the Wm. Cramp & Sons Ship & Engine Building Co., Philadelphia, and manufactured by the Chicago Pneumatic Tool Co. of Chicago, Ill.

The rammer can be run by compressed air or steam, the former preferred, and is used for ramming up the pits about a loam mold or to ram up the pits after the casting has been taken out, either loam or green sand work. Any shaped tool can be used on it to ram up a mold, or break up the ground (saving digging) or for bedding in a casting. It can be adapted to ramming up cast iron water and gas pipe; used by contractors in both digging and ramming up trenches or for pounding stone or concrete; or in boiler shops or metal works for straightening plates, etc. Any laborer can turn on the air and guide the rammer. It is generally hung on a portable wall or post crane, that can be moved from place to place. It consists of two vertical cylinders held apart by stanchions containing pistons driven by compressed air or steam, which is regulated by a simple, ingeniously contrived valve. The cylinders are $3\frac{1}{2}$ inches diameter by 4 inches stroke. With an air pressure of 35 pounds per square inch it strikes 200 blows per minute, light or heavy, as may be desired. Power is supplied by a flexible hose tapped from the main pipe. It strikes a blow of 300 pounds or less, as desired; one turn of the rammer raises or lowers it $\frac{1}{2}$ inch, which is readily accomplished while in motion. The rammer complete weighs about 675 pounds.

A large loam mold which usually took three days was rammed up with this machine in the Cramp foundry in eleven hours. They had ten of these castings (pump cylinders) to make. The time saved in floor space alone was twenty days, with increased capacity of the core ovens in the same proportion. Any deep casting rammed up with this machine will be less in weight than if done by hand. The illustration shows the rammer fitted with the 9-inch diameter butt, which is equivalent to more than forty hand rammers.

SHAMROCK'S TRIP ACROSS THE ATLANTIC.

The cup challenger Shamrock arrived in New York Friday morning, Aug. 18, after an uneventful voyage of 14 days, 19 hours and 28 minutes from Fairlie, Scotland. During the voyage she was towed 1280 miles by Sir Thomas Lipton's palatial steam yacht Erin, which accompanied the craft on her trans-Atlantic voyage. The Shamrock came all the way on the southerly route and on the port tack. She had light to strong north-west and northerly winds, with some squally weather in the vicinity of the Azores. The following from the log book of the Erin shows how the Shamrock sailed each day:

Date.	Latitude, noon.	Longitude, noon.	Distance, miles.
August 4	53.10 N	4.52 W	203
" 5	51.03 N	10.32 W	263
" 6	48.13 N	16.25 W	282
" 7	46.28 N	21.00 W	223
" 8	44.29 N	24.36 W	193
" 9	42.20 N	27.49 W	190
" 10	39.48 N	31.21 W	243
" 11	39.13 N	37.00 W	263
" 12	38.44 N	42.00 W	231
" 13	38.13 N	47.31 W	266
" 14	38.52 N	53.41 W	290
" 15	39.16 N	59.05 W	258
" 16	39.23 N	63.36 W	210
" 17	40.07 N	69.14 W	265
" 18	Sandy Hook		216
Total distance.....			3,596
Total time occupied, 14 days, 19 hours, 28 minutes.			
Average speed per hour, 10.1 knots.			

The Shamrock's best day's run under canvas alone was Aug. 5, when she covered 263 miles. The yacht sailed 2,316 miles out of the total of 3,596.

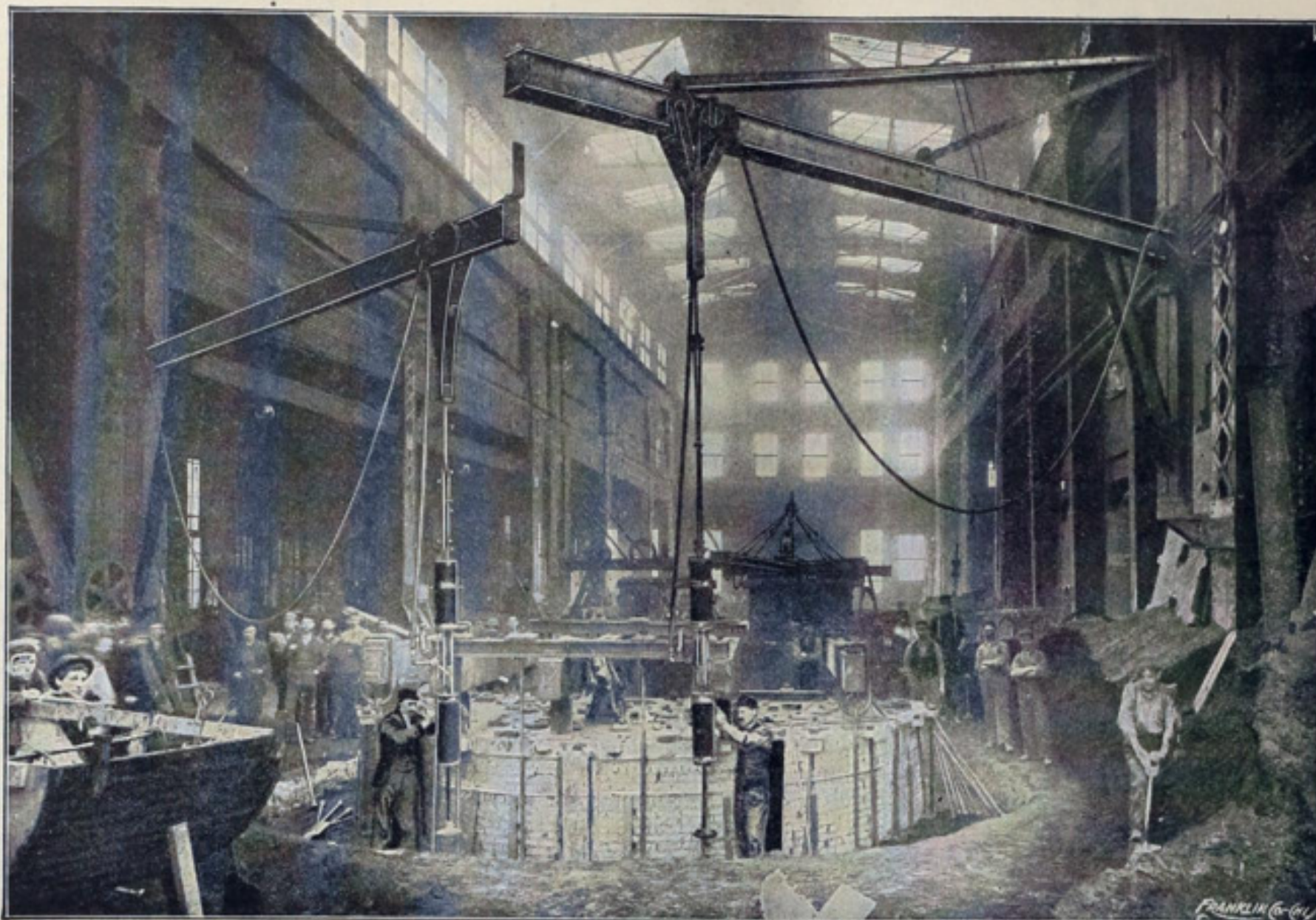
Schichan, the well-known builder of torpedo boats at Elbing, Prussia, has just launched a new type of torpedo boat, and it is announced that all torpedo boats hereafter built for Germany will be 68 meters long and draw 9 feet of water, and will be capable of steaming 35 knots. The German naval fleet consists at present of eleven battleships, eight coast ironclads, thirteen ironclad gunboats, ten large and twenty-three small cruisers, three gunboats, about 100 torpedo boats, sixteen training ships, and thirteen ships for special purposes, with a total displacement of 326,701 tons and 399,030 horse power.

It is understood that the next congress will be asked to raise the limit of the enlisted force of the navy from 17,500 to 20,000, in order to provide additional men required for the five battleships that are expected to go into commission between now and next spring.

Attention, Comrades! The Nickel Plate road has authorized special low rates to Philadelphia, account Annual Encampment G. A. R. Tickets on sale Sept. 1, 2, 3 and 4. See agents. 116, Sept. 4.

BIDDERS ON BROOKLYN NAVY YARD MACHINERY.

Ten firms have submitted bids either for the construction of a new power house or the provision of a series of electric cranes in the machine shop at the Brooklyn navy yard. The specifications provide that the



government shall furnish the building 80 by 100 feet and a stack 150 feet high. The boilers, to be supplied by the contractor, are three in number, aggregating 1200 horse-power, each boiler to have a total of not less than 4000 square feet of heating surface, and not less than 80 square feet of grate surface. Three engines are provided, each directly connected to a 400 K. W. alternating generator, the engines to be of the vertical cross-compound and condensing type, arranged for operating at 133 revolutions per minute. The motors must supply a horse-power of about 1800 with such distribution as the government may choose to specify. All motors to be of the alternating current type, operating from a two-phase current at 200 to 220 volts and 3000 alternations per minute. To supply the department with the above described plant complete there were three bidders, each submitting a series of bids conditioned upon the details of the plant to be supplied, as follows: United Co., New York, eight bids, ranging from \$184,640 to \$189,740; Westinghouse Electric & Mfg. Co. of Pittsburgh, forty bids, ranging from \$149,800 to \$175,900; Bullock Electric Co., New York (a), \$187,953; (b), \$189,157.

Items 2, 3, 4 and 5 in the proposals for cranes recently opened were as follows:

Item 2—One four-motor electric traveling crane, complete in all parts, with conductors and insulating support, having a maximum working capacity of 40 tons, with a span 70 feet from center of the runway tracks and a runway of 347 feet.

Item 3—One three-motor electric traveling crane, complete, with the maximum working capacity of 25 tons, span of 70 feet and runway of 338 feet.

Item 4—Two three-motor electric traveling cranes, complete, with maximum working capacity of 10 tons, span of 67 feet 4 inches and runway of 347 feet.

Item 5—Two three-motor electric traveling cranes, complete, with maximum working capacity of 10 tons, span of 67 feet 4 inches and runway of 338 feet.

The bidders were as follows:

William Sellers & Co., Philadelphia: Item 2, \$11,290; 3, \$8,160; 4, \$12,100; 5, \$12,100.

Manning, Maxwell & Moore, New York: Item 2 (a), \$14,117; (b), \$17,443; 3 (a), \$9,442; (b), \$11,627; 4 (a), \$11,926; (b), \$15,919; 5 (a), \$11,926; (b), \$15,919.

Brown Hoisting & Conveying Machine Co., Cleveland, O.: Item 2, \$13,886; 3, \$9,170; 4, \$11,580; 5, \$11,580.

Morgan Engineering Co., Alliance, O.: Item 2 (a), \$14,430; (b), \$11,130; 3 (a), \$8,405; (b), \$6,930; 4 (a), \$13,860; (b), \$9,860; 5 (a), \$13,860; (b), \$9,860.

Niles Tool Works, New York: Item 2 (a), \$10,970; (b), \$11,130; (c), \$11,410; 3 (a), \$7,195; (b), \$7,379; (c), \$7,616; 4 (a), \$9,880; (b), \$10,133; (c), \$10,454; 5 (a), \$9,860; (b), \$10,112; (c), \$10,434.

Pawling & Harnischfeger, Milwaukee, Wis.: Item 2, \$10,500; 3, \$7,500; 4, \$8,800; 5, \$8,800.

South American governments have under consideration a project for the construction of the greatest system of inland waterways in the world. It is nothing less than a proposition to connect by means of canals the great river systems of the continent of South America, making a navigable waterway from the Valley of the Orinoco to that of La Plata. No accurate surveys have been made, and even the preliminary figuring has resulted in an estimate of the cost being placed at \$200,000,000, which would seem to indicate that the consummation of the scheme may be long delayed. It has, however, already been formally submitted to some of the governments.

MARINE REVIEW

Devoted to the Merchant Marine, the Navy, Ship Building, and Kindred Interests.

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When a new Carnegie Steel Co. with immense capital was proposed some time ago, and it was said that Mr. Carnegie had sold out to his partners his interest in the great works that bear his name, there were a few people closely in touch with iron and steel matters who were very positive in the opinion that the deal would never go through, as they said Mr. Carnegie wanted too much for his control of the present company and its allied interests. Later on several of the principals of the Carnegie company went to Europe, and it was then said that negotiations were to be dropped until the present month, August. Within the past week the reorganization has again been talked of in New York financial circles, and another postponement is announced—at least as far as the newspapers are concerned. Now it is said that the big company will not be formed until fall.

A special report recently forwarded to the secretary of the navy from Manila serves to emphasize a point already brought out relative to the immense saving which might be made were the United States government to establish a ship yard and dry dock at Cavite, in order that vessels of the Asiatic squadron might be repaired without entailing the heavy expense necessary when they are sent to private ship yards at Hong Kong as is now necessary. Mr. Hobson points out the advantages gained by Great Britain in building her own docks. He also directs attention to the fact that Manila is bound to become an important commercial port and place of call for merchant vessels bound across the Pacific, and a dry dock and repair station would have thus a distinct commercial value aside from its convenience to the navy department.

Some tools have been removed from the Wheeler ship yard at West Bay City, Mich., to other plants of the American Ship Building Co. (consolidated organization), and it is more than probable, notwithstanding statements to the contrary, that the whole plant will be dismantled before long. Unless there should be a great rush of work that can not be handled at other yards, and supplies of material to meet all requirements, it is not at all probable that the West Bay City yard will be maintained by the combination. There are some advantages at West Bay City from a labor standpoint, but the combination can now handle the labor question better than it could be handled by the several separate companies. In other respects the location of the West Bay City yard is a drawback. It may not be abandoned right off but it will be dropped in time.

A London correspondent informs the Review that already every first and second-class berth on the big White Star liner *Oceanic*, which is scheduled to leave Liverpool Sept. 6, has been taken. The big steamer a few days ago took on 2000 tons of coal at Belfast and left for Carrickfergus Roads (Belfast Lough). While laying in the lough, and before sailing for Liverpool, she will be thrown open to the public for inspection for one day at 5 shillings each, the sum raised to be devoted—with Mr. Ismay's consent—to the fund for the erection of the Royal Victoria Hospital, which Mr. and Mrs. Pirrie have done so splendidly in promoting, a sum of £100,000 having been raised by them for the purpose in the second year of his (Mr. P's) mayoralty in Belfast.

One of the latest reports regarding big undertakings on the part of Mr. J. J. Hill of Great Northern railway fame, is that he is considering the building of fifteen steamers of 8,000 to 10,000 tons each for the Pacific service that he has talked of for a long time past. In view of the present condition of the ship building industry in this country, such a fleet of vessels could not be built inside of three or four years, even if orders were placed at once, but if Mr. Hill is to build ships for foreign trade under the present disadvantages of American register and in advance of the proposed shipping legislation by congress, it is more than probable that the work would go to foreign builders and that the vessels would be operated under a foreign flag.

In no season for five or six years past have lake underwriters been as fortunate as they have been up to August of the present season. They have had practically no total losses, with the partial losses few in number and none of them very heavy. But collisions and strandings during the past two weeks are quite important. The sinking of the *Trevor*, followed by the stranding of two other steam vessels, the *Penobscot* and *German*, within the past few days, will result in some large wrecking bills as well as important repair jobs. The *German* is on a rocky bottom near *Detour*, and may not be released for ten days or more, and the release of the *Penobscot* has also proven a slow job.

New England ship builders are getting their share of the business improvement that is generally reported. In addition to the large amount of work under way on steel vessels at the Bath Iron Works and the yard of Arthur Sewall & Co., there are at present no less than eleven large schooners building in Maine yards, and a fleet of six more is to be built by the New England Navigation Co. at Newburyport, Mass. The carrying capacity of these vessels will be something over 50,000 tons of cargo.

HANNA-PAYNE SHIPPING BILL.

ANSWERS TO CRITICISM REGARDING IT—NOT AT ALL EXTRAVAGANT WHEN COMPARED WITH THE SUPPORT FOREIGN GOVERNMENTS OFFER TO THEIR MAIL STEAMSHIPS.

BY E. T. CHAMBERLAIN, U. S. COMMISSIONER OF NAVIGATION.

Some of the recent criticisms of senate bill No. 5590, generally called the Hanna-Payne bill, convey the impression that the compensation it provides for steamships is wholly unreasonable. On the general principle of the bill, differences of opinion are to be expected, but its details are not, I believe, subject to criticism on the score of extravagance, at least when compared with the support foreign governments offer to their mail steamships.

The bill gives a uniform rate of compensation to all vessels (sail or steam), virtually 1 cent per gross ton for each 100 nautical miles traversed, to offset the increased cost of construction and operation in the United States. I do not care to go into an examination here of all the facts on which this rate is determined. It has not, so far as I am aware, been criticised as unreasonable, if one accepts the theory that the government is warranted in offsetting those differences in order to give our merchant shipping in foreign trade a start.

The bill also gives (over and above that virtually 1 cent per ton per 100 miles) a special allowance for steamships of over 1500 gross tons and of 14 knots speed or upward. About 80 per cent. of the seagoing screw steamships in the world which comply with the requirements named as to size and speed now received, the assistance in some form of the various governments whose flags they respectively fly. The proposition in senate bill 5590, so far from being unwarrantable, therefore, is merely compliance with the ordinary maritime custom of years. It seems strange only to those who have not looked at the facts.

The special and additional rates for steamships of 14 knots or over, which have been condemned as extravagant and unheard of, are designed to offset the corresponding allowances given to similar steamships by foreign governments. Bearing in mind that these rates only (not the allowance for difference in cost of construction and operation) are being considered, the rates proposed are not more than enough to counterbalance contributions by foreign governments to similar steamships. The large British mail contracts are awarded in lump sums, but I have been at the pains to ascertain the steamships by which they are performed, their size, speed, number of voyages and distances traversed during a year. With this data it is easy to ascertain the additional rates named which similar vessels would be entitled to under senate bill 5590. Viewed another way, this comparison will show what foreign governments pay to certain steamships and what American steamships of precisely the same size and speed, running parallel to them throughout a year, would receive as an offset under the Hanna-Payne bill, so called. The detailed computations would fill several columns, but following are the summaries (including tonnage of the contract vessels):

	Tonnage.	British Contract.	Senate bill No. 5590.
Peninsular & Oriental.....	148,355	\$1,660,297	\$1,146,941
Pacific Steam & Orient S. S. companies.....	56,305	413,100	465,531
Castle Mail and Union S. S. companies.....	63,676	456,840	498,410
Royal Mail.....	21,733	291,600	196,742
Canadian Pacific.....	17,715	291,600	140,586
Cunard and White Star.....	79,478	665,545	1,040,624
Totals.....	387,262	\$3,778,982	\$3,488,834

Senate bill 5590 thus proposes to offset \$3,778,982 awarded under British contracts with \$3,488,834 awarded under American contracts. The proposition is not extravagant, nor does it mean a pot of money for the owners of fast American steamships. Were it not for two facts—that Americans will obtain advantages for operating slow cargo boats in conjunction with mail steamships, and that our Pacific intercourse with Asia is not subject to Suez canal tolls—the bill would probably fail to accomplish its purpose.

The last item in the table, which shows a marked difference, calls for a word. The United States has been paying the Cunard and White Star lines annually \$180,000 on the average for some years (\$225,000 in 1898) for carrying the outward mails. Unless this amount be added to the \$665,000 paid those lines by the British government, it ought to be deducted from the \$1,040,624 which corresponding American vessels performing the same service would receive under senate bill 5590, as being "merely mail pay," and having nothing to do with ship subsidies.

Any method of comparing facts with which I am familiar will show that such advantages as the Hanna-Payne bill gives to American shipping are as much to the benefit of cargo vessels as to mail steamships, in spite of the higher rates given to the latter class, which have been computed on the basis of efforts by other nations to maintain fast ocean mail lines.

The directors of the New York Ship Building Co., recently organized by Henry G. Morse, and which is now engaged in establishing a very large ship building plant at Camden, N. J., is composed of Henry G. Morse, president, formerly of the Harlan & Hollingsworth Co.; A. W. Mello, president of the Union Insurance Co. of Pittsburg; James H. Lockhart, member of the Standard Oil Co.; Michael Jenkins, president of the Merchants' & Miners' Transportation Co. of Baltimore; Henry Walters, president of the Atlantic Coast Steamship Co.; J. Craig Smith and Myron C. Wick, two prominent capitalists of Youngstown, O. The company is chartered under the laws of Pennsylvania, with a capital of \$3,000,000, which will very likely be increased.

Another order, this time for three steel tugs for the Pennsylvania Co., has been booked by the Harlan & Hollingsworth Co. of Wilmington, Del. The tugs, to be 100 feet long each, are designed for harbor towing. They will be used, like a fleet of similar vessels already in service, by the Pennsylvania Co. for towing barges and lighters from slip to slip in the harbors of New York and Philadelphia.

AROUND THE GREAT LAKES.

Rooney Bros., contractors of Toledo, have begun work on a \$100,000 contract for dredging Belle river at Marine City, Mich.

Capt. John Freer of Chicago, sixty years of age, an old-time lake navigator, died on board his vessel, the schooner M. T. Downing, on Tuesday last.

David Molitor, assistant engineer in the United States engineer office at Detroit, has been detailed to Oswego to carry on work connected with the lake level investigation.

E. F. Bradt, who has been responsibly connected for a number of years with the Pittsburg & Lake Angeline Iron Co., has become agent for the Minnesota Iron Co., for the Marquette and Menominee range properties it has been taking up of late.

Charles A. Thompson, well known in marine circles, is dead at Racine, aged sixty-five years. In Milwaukee he became identified with the Goodrich Transportation Co. in 1865 as purser, and remained with that concern until 1896, latterly as agent at Racine.

It is certainly no wonder that lake freights have been climbing to high figures when it is announced from the Ironwood district of Michigan that steam shovels engaged in loading ore from stockpiles had to shut down last week on account of a scarcity of vessels at the shipping ports.

Another big freight carrier that is certain to figure in cargo records, the steamer Maunaloa, was launched at the works of the Chicago Ship Building Co. on Saturday last. She is of the 7000-gross-ton type and is for the Minnesota Steamship Co., to be managed in the office of Pickands, Mather & Co., Cleveland.

Wednesday, Aug. 30, 5 p. m., is the time set for the launch of the steamer Buffalo, building at the works of the Union Dry Dock Co., Buffalo, for the Western Transit Co. The Buffalo is a sister ship of the steamer Troy, built not long ago at Buffalo. These steamers are the largest package-freighters on the lakes.

New life saving stations will be built at Charlevoix, Lake Michigan, and at Grand Marais, (Mich.), on Lake Superior. Bids for these stations were opened at Washington a few days ago. Charles Hoertz of Grand Rapids, whose bid was \$4,576, will build the Charlevoix structure. For the construction of the Grand Marais station the lowest bid, \$6,280, was submitted by Frank R. Speare of Rockland, Me.

A fourth-order light, fixed white for twenty seconds, followed by four red flashes at intervals of five seconds, will be established in the structure recently erected on the outer end of the south pier at the entrance to the Waukegan harbor. The focal plane of the light will be 37 feet above the mean lake level, and the light may be seen 13 statute miles in clear weather with the observer's eye 15 feet above water.

Although neither masters nor owners will admit it, there are several wooden vessels that have repeatedly been loaded to a depth of 18 feet 3 inches to 18 feet 5 inches during the past two months. Such vessels were, of course, taking chances in getting through the rivers. This must now be stopped, or these vessels will not only cause trouble for themselves but for others. Reports from all river points are to the effect that the water is getting lower and cargoes must be materially lightened.

During the coming year, the grain elevator capacity at the head of Lake Superior will be increased 13,500,000 bushels. Among the houses already building or for which plans have been made, this increase is apportioned as follows: Great Northern, Superior, 5,000,000; Peavey, Duluth, 5,000,000; Omaha, Allouez bay, Superior, 1,250,000; United States Flour Milling Co., Duluth, 1,000,000; United States Flour Milling Co., Superior, 300,000; addition to Consolidated, Duluth, 700,000; Hall Clearing house, Superior, 50,000.

A duplicate of the passenger and freight steamer Illinois, built last winter by the Chicago Ship Building Co. for the Northern Michigan Transportation Co., and now in service on Lake Michigan, will very probably be built during the coming winter at the same yard. The transportation company is highly pleased with its new vessel. The Chicago yard will be very busy on work already under contract and material will be scarce and high in price, but not much steel will be required for a hull of this kind, and the job of building such a vessel is, of course, desirable.

Rumors regarding the construction of two more passenger steamers of the North West-North Land kind by the Northern Steamship Co. are probably without foundation. Officials of the company made no answer to inquiry regarding the report. It is advertising for the company whether they intend to build or not. The Northern line steamers, which are the finest on the great lakes, have, alike to all other passenger vessels, been enjoying a large business during the present season, but in view of the present condition of the ship yards and the markets for all kinds of material, they could not be duplicated within two years, even if an order was placed at once.

Assistant United States Engineer J. H. Darling of the Duluth office furnishes, through the hydrographic service, exact information regarding the shoal discovered to the westward of Bear island, Apostle island group, and supposed to be the spot on which the steamer Roumania struck on June 21, 1899. A shoal spot, with 17 feet of water over it (15 1-10 feet when reduced to mean low water level), surrounded by depths ranging from 18 to 20 feet for a distance of 1/2 mile, in a N. by W. and S. by E. direction, was found to bear WSW. 1/2 W., distant 4 2-10 miles from the northern extremity of Bear island, and NNW. 5/8 W., distant 4 3-10 miles from Raspberry island light-house.

It is now quite probable that the Thompson Towing & Wrecking Co. of Port Huron will, within a few days, tow into Houghton, or some other port on Lake Superior, the steamer Harlem, which was wrecked on the rocks of Isle Royale last fall. The vessel was pulled off the rocks a few days ago, but had to be beached again on account of a list that rendered the pumps inoperative. If the Thompsons save this vessel they will not only have made a reputation for themselves but will undoubtedly profit by the operation. They have been at work eleven weeks. The cost of releasing the Harlem is estimated at \$20,000, and \$50,000 will probably cover the repair bill. Add to this \$30,000 said to have been paid for the

wreck, and the cost of the steamer to the Thompson Towing & Wrecking Co. when again ready for business will be an even \$100,000. If made as good as she was before she stranded, the Harlem ought to be worth about \$200,000. In the job of wrecking, which has been under the direction of Capt. Wash. Harrow, eight large steam pumps have been used.

The Calvin Co., wreckers and forwarders of Garden Island, Ont., are credited with having successfully performed a very dangerous feat of towing on the St. Lawrence river a few days ago. Davis & Sons, contractors for the Montreal water-works had a dredge and three scows working just abreast of the big chute in the Lachine rapids, known as Verdun, or the "Lost Channel." As the dredging job was completed, they wanted the dredge and scows taken out of the rapids. The job seemed almost impossible of accomplishment. The Calvin Co. being applied to, they at once surveyed the channel and placed buoys on the shoals. Two powerful steamers were sent down, and placed as near to the dredge and scows as possible, without descending the rapids. From there about half a mile of steel wire cables was dropped down to the dredge and scows, and with the powerful steam winches on one of the steamers they were drawn up one by one until they reached the stern of the first steamer, when both steamers put on full steam and towed them up the seething current through the Lachine bridge and thence into the canal.



Barge Sophia Minch of Cleveland as she appears stranded on the beach near Ashtabula, Lake Erie.

ANOTHER ROUND.

The litigation growing out of the collision of May 19, 1890, in which the steamer Ohio was sunk in Mud lake (St. Mary's river), is not closed yet. A new chapter opens with an action in the court of common pleas at Cleveland, brought by the owners of the steamer Siberia against the owners of the steamer Mather (both which vessels were proceeded against by the owners of the Ohio), in which the claim is made that by reason of the Mather's fault, the owners of the Siberia have been compelled to and have paid a large sum to the owners of the Ohio.

The circumstances of the collision and the course of the proceedings in admiralty are known to most lake people. It will be remembered that in the United States district court each of the steamers was held to be at fault, the Mather in that she, as the overtaking vessel negligently approached so close to the Siberia that her suction started the Siberia on the sheer which brought her into collision with the Ohio; the Siberia was held at fault in that she did not reverse as soon as she began sheering, and that it was negligence to experiment with the helm, in an endeavor to clear the Ohio, before stopping and backing; and the Ohio was condemned for not stopping and backing as soon as the Siberia's sheer was discovered. All the parties appealed.

The United States circuit court of appeals for the sixth circuit reversed the district court as to the Ohio, holding that the situation was one of surprise to which she had not contributed; that within from forty to sixty seconds after the sheer began the collision occurred, which gave little time to think and less to act, and that even if she committed a mistake, it was an error and not a fault. The Mather was found at fault on the same ground as found by the district court, namely, "in undertaking to pass the Siberia in dangerously close proximity, and this fault we have no doubt started the swing of the Siberia through suction." The Siberia was condemned on the ground that as between the Ohio and Siberia, the Siberia's defense "is that of inevitable accident," her owners having admitted that she felt her course and ran into the Ohio, but averring, as was also stated in the libel of the Ohio, that she was compelled to do this by reason of the fault of the Mather in approaching so close that her suction threw the Siberia on the sheer which resulted in collision; that as to the Ohio the Siberia must show that her own management was such, both before and after the sheer, as not to have contributed, and that while as between the Mather and the Siberia any doubts as to the Siberia's management must be resolved in the Siberia's favor, but the question, the court said, we have here to decide, is as to the liability of the Siberia to the Ohio. * * That liability must be determined upon very different principles," and she was condemned because "she has not satisfactorily shown that this sheer was wholly without fault upon her part, nor has she shown that the resultant collision was due to an agency wholly beyond her control."

The present action seems to be one in which it is sought to have the question of fault determined as between the Mather and the Siberia. The course of the case just begun will be watched with considerable interest.

TRIAL OF A LIFE RAFT.

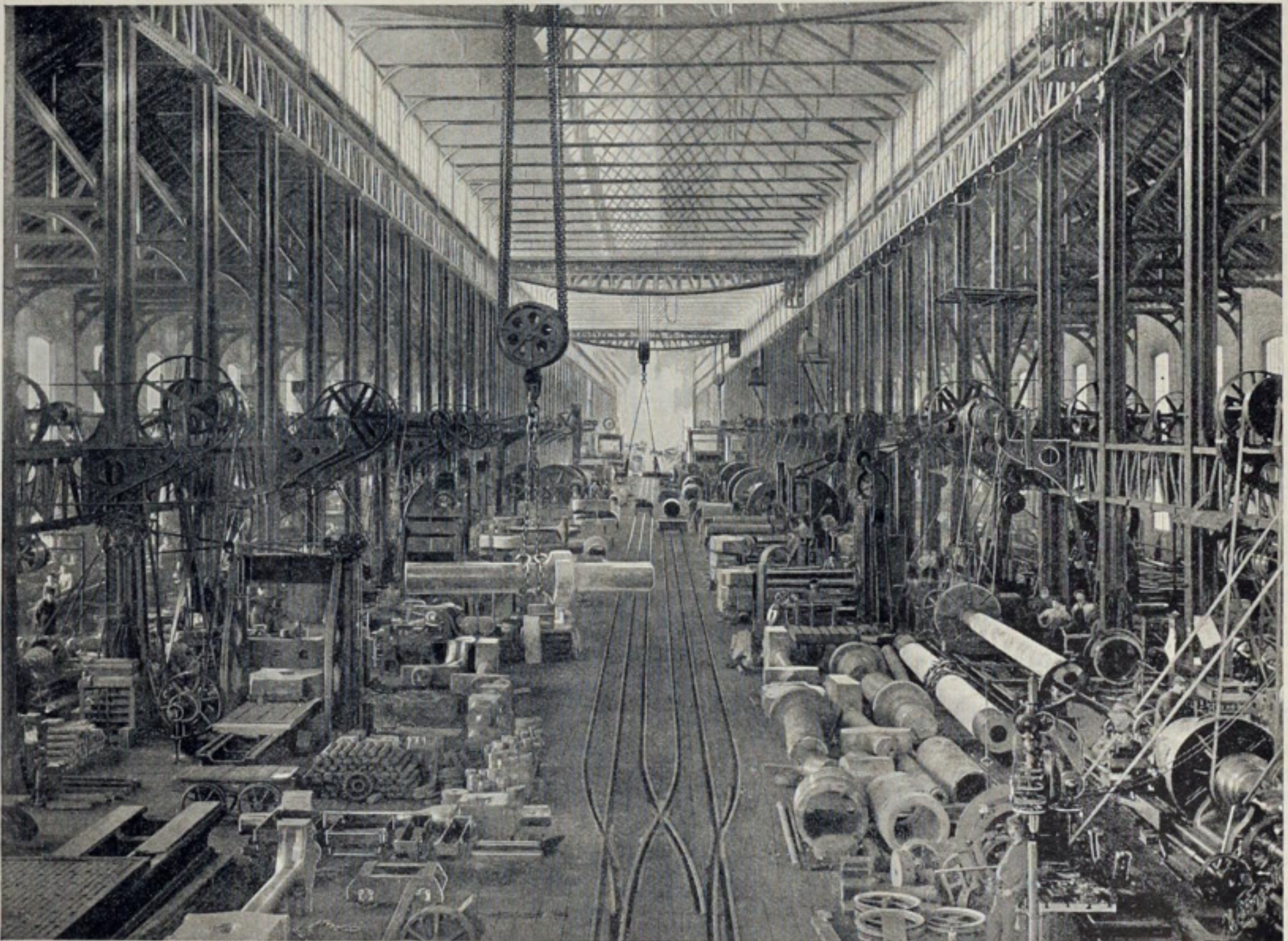
The Anthony Pollok memorial prize of \$20,000 for the best device for saving life at sea has already stimulated invention along this line. It will be recalled that Mr. Pollok, who was a patent expert at Washington, was drowned with his wife in the Bourgoigne disaster. Particulars of the competition for the prize offered from his estate, and which have just been issued by the state department at Washington, will be found elsewhere in this issue.

A device that will very probably be entered in this competition was tried, a few days ago, near the Cunard company's pier, East Boston. It is a life raft, or float, the invention of Horace S. Carley of Hyde Park, who has been at work on it for years and is now prompted to special effort on account of the Pollok reward. The raft is shaped somewhat after the style of ring buoy. It is formed of an endless copper tube 10 inches in diameter and divided into thirty-five separate compartments, which are both air and water-tight. This tube is covered with several inches of compressed cork, which has four times the buoyancy of ordinary cork. This is bound to the tube with canvas and brass bands. The elliptical space enclosed by this cork-covered tube is 10½ by 5½ feet at its greatest length and breadth. The bottom is attached to the float by a netting fastened to rings that slide upon bands that encircle the float, and is thus reversible, so it may be thrown into the water without the least care as to how it may fall, for it must, by its construction, be right side up and ready for occupancy in any case. Life lines, buoys, paddles, signal flags

WHERE JOHN CRAIG FIRST BUILT SHIPS.

The old saying that we must go away from home to get the news is brought to mind by a communication in the New York Sun from A. W. Moynihan, who goes into reminiscences over bottom repairs now being made in New York on the steel steamer Mae, recently built at the works of the Craig Ship Building Co., Toledo, for Atlantic coast service. Mr. Moynihan says:

"To those who remember the palmy days of ship building on the east side of New York city a visit to the pier, foot of East Fourteenth street, might prove interesting. A new pier has recently been built at Fourth street and a new dry dock, known as Shewen's dock, has been placed alongside of it. Shewen's dock derives its name from an old-time ship builder named Shewen, whose skill as a mechanic and popularity as an employer of men have been household words for a generation. Since the removal recently of the last of the sectional docks that stood for years along South street the ship builders have moved up to Shewen's dock. On the dock at present is a magnificent iron steamship brought from Lake Erie by John Craig. Mr. Craig, it so happens, is an old Eleventh warder, born and bred there. He graduated from the old Fifth street school and learned the ship building trade on the very ground where Shewen's dock now stands. On the decay of ship building in New York Craig went west and took a ship yard at Trenton, Mich., and afterward at Toledo on Lake Erie. His action in bringing the Mae back to his birth place and thus giving employment to hundreds of New York's mechanics



A PICTURE FROM THE WORKS OF THE BETHLEHEM STEEL CO., SOUTH BETHLEHEM, PA.

MACHINE SHOP NO. 2 FOR GENERAL WORK ON MARINE SHAFTING AND MISCELLANEOUS FORGINGS.

and provisions will be attached to the body of the float so that they may be conveniently used when necessary. It is claimed that the device affords unsinkable support for many people, and yet it is so light that it can be put into the sea by two men, or three or four women, without the use of davits or machinery of any kind. It can be built for something like \$175, or perhaps much less.

At the Boston trial the float was pushed overboard from a lighter, and twenty-five longshoremen and employes of the Cunard company went over the side, swam to the raft and crawled inside. When the twenty-five were in, there was not the slightest tendency to sink, and it was claimed that seventy-five could be supported by it just as safely. When the men were inside they gave some practical tests by opening a water-tight keg and sending off Roman candles, which had been inside. They also threw the life buoys to men at a distance.

Mr. Carley does not claim that the occupants of a float of the kind he proposes would outlive a great storm, but he says his float would be of far more advantage than the kind of rafts now in use. "On a raft like mine," he says, "I fear the occupants would be drowned if exposed to a great storm for any length of time; that is, you understand, in a heavy sea and storm, such as we had on the night the Portland went down. But even on that night the bodies would not have been lost. No matter how many get onto this raft, there can be no tipping up, so that the people would slide off, and even if submerged it will sink very hard."

Charts of the world, charts of the great lakes, handled by the Marine Review. Charts of the great lakes always in stock.

has made Johnny Craig a popular man. It seems like history repeating itself. It is fifty years since a famous dry dock was located at the foot of East Tenth street. It was from this dock that the Eleventh ward took its name, the "Old Dry Dock," which clings to it still. At one period twelve thousand men found employment at ship building alone around the Old Dry Dock.

"With the advent of Shewen's dock, the dream of old New Yorkers that ship building might be again revived on Manhattan island, bids fair in a measure to be realized. When James Fisk, Jr., in the height of his power, promised to bring the Sound steam boats to dock and to be repaired on the East River front, the shipwright's hopes brightened. With Fisk's death the matter was abandoned. Efforts were made to get a bill through the legislature to improve the East river water front so as to induce the owners of vessels to come there. But the East side citizens, disgusted with the action of the pretended friends of the measure, and the flimsy excuses given for their inaction, let the matter drop for a while. Bills to saddle the taxpayers with additional burdens engrossed the attention of statesmen sent to Albany from this city, while the workmen of New York were fooled. The crowds of hard-handed artisans going to and returning from the Shewen dock these mornings and evenings recall to old residents the glorious days of the past, and with the high hopes of the better days to come, the mechanics claim that Jim Fisk's dream will yet be realized, so-called statesmen relegated to the rear, neither trickery nor treachery will be able to stop it, and that no law looking to the revival of the great ship building industry in this town will ever be declared unconstitutional."

TRADE NOTES.

It is certainly a strong endorsement of a metal polish to find it used on such famous yachts as the Columbia and Defender. These yachts use Bertram's polish, which is meeting with high favor wherever it is used and which is manufactured by Bertram's Oil Polish Co., Boston.

A new shop to be erected by the Manitowoc Boiler Works will be one of the finest of its kind in the northwest. It will be 175 by 75 feet and will be equipped throughout with modern tools and labor-saving appliances, including an electric crane of 40 feet span and 10 tons lift, and a set of bending rolls capable of handling plate of 1¼ inches thickness.

A bulletin (No. 5034), just issued by the Bullock Electric Mfg. Co. of Cincinnati, deals with the engine type generator made by that concern. As usual, the illustrations and matter descriptive of the machines are of a very clear kind. All the advantages of this type of generator, running through the various details of construction, are set forth in the bulletin, which will be mailed upon application.

The United States assistant engineer in charge of the government steam launch Sharpie, used for supervising harbor improvements in the vicinity of Georgetown, S. C., writes as follows to A. Wells Case & Son of Highland Park, Conn., manufacturers of the Case outward thrust propeller wheel: "Our vessel is 48 feet long and 9 feet beam and we have been using for a long time past the wheel you made for us. It gives perfect satisfaction and is the smoothest running thing I ever saw in my life." The Case wheel is, of course, suited to steam vessels of large dimensions as well as launches of the Sharpie kind.

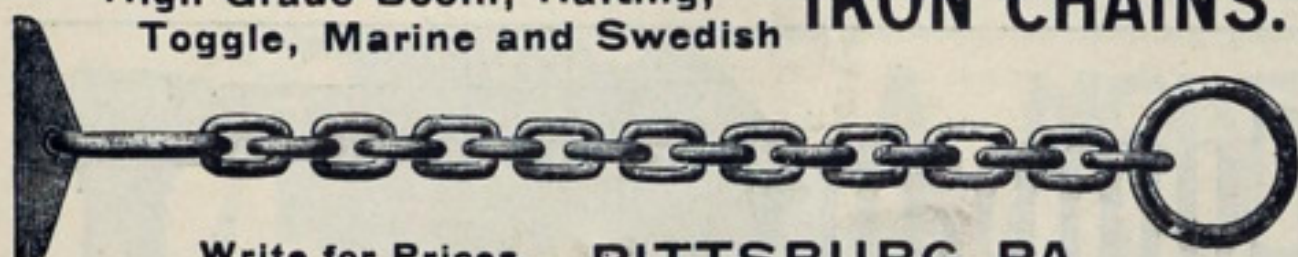
The Lake Erie Engineering Works of Buffalo, N. Y., has been allowed a premium of \$16,795 in addition to the contract price of \$83,875 for the new 30,000,000-gallon pump recently installed at the Fourteenth street plant of the waterworks system of Chicago. The contract provided for a pump which should lift 135,000,000 pounds of water one foot for each 1,000 pounds of steam and that the company should receive \$1,000 extra for each additional 1,000,000 pounds of water it should lift. The result of the official test was published some time since, but a decision as to the amount of the premium won has just been made by the Chicago authorities.

Emil L. Boas, New York agent of the Hamburg-American Steamship Co., has been notified by the home office that the steamship Kaiser Friedrich, which was built as a sister ship for the Kaiser Wilhelm der Grosse, but which was returned by the North German Lloyd line to the builders after being in commission for a year, has entered the service of the Hamburg-American line. She will sail from Hamburg Oct. 1 on her first voyage in the new service.

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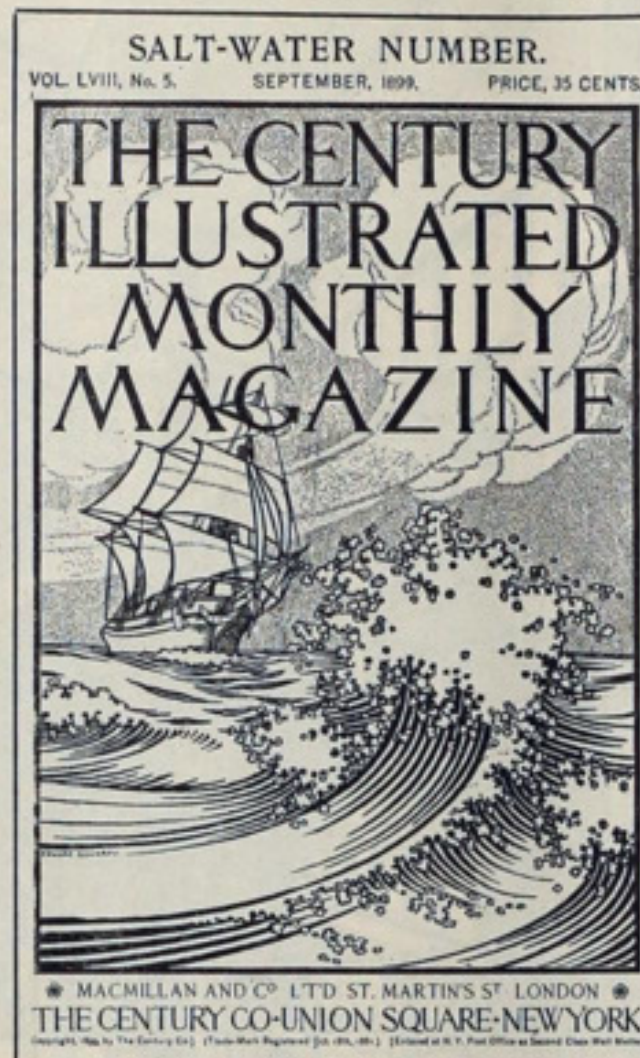
ANOTHER BOOK worth having on your shelf is **THE FOREMAN'S GUIDE**, by K. P. DAHLSTROM. Cloth, 50 cents.

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Mr. George Y. Wisner, member of the United States Board of Engineers on Deep Waterways, says in a letter to the Marine Review: "I have a copy of your 1899 Blue Book of American Shipping. It is needless to say that it is not only satisfactory but a necessity to every one desiring to be posted on American shipping."

U. S. Engineer Office, Galveston, Tex., Aug. 21, 1899. Sealed bids, in triplicate, for improving mouth of Brazos River, Tex., by repairing jetties, and otherwise, will be received until 2 p. m., Sept. 20, 1899, and then publicly opened. For information apply to C. S. Ritchie, Capt., Engrs. Sept. 14.

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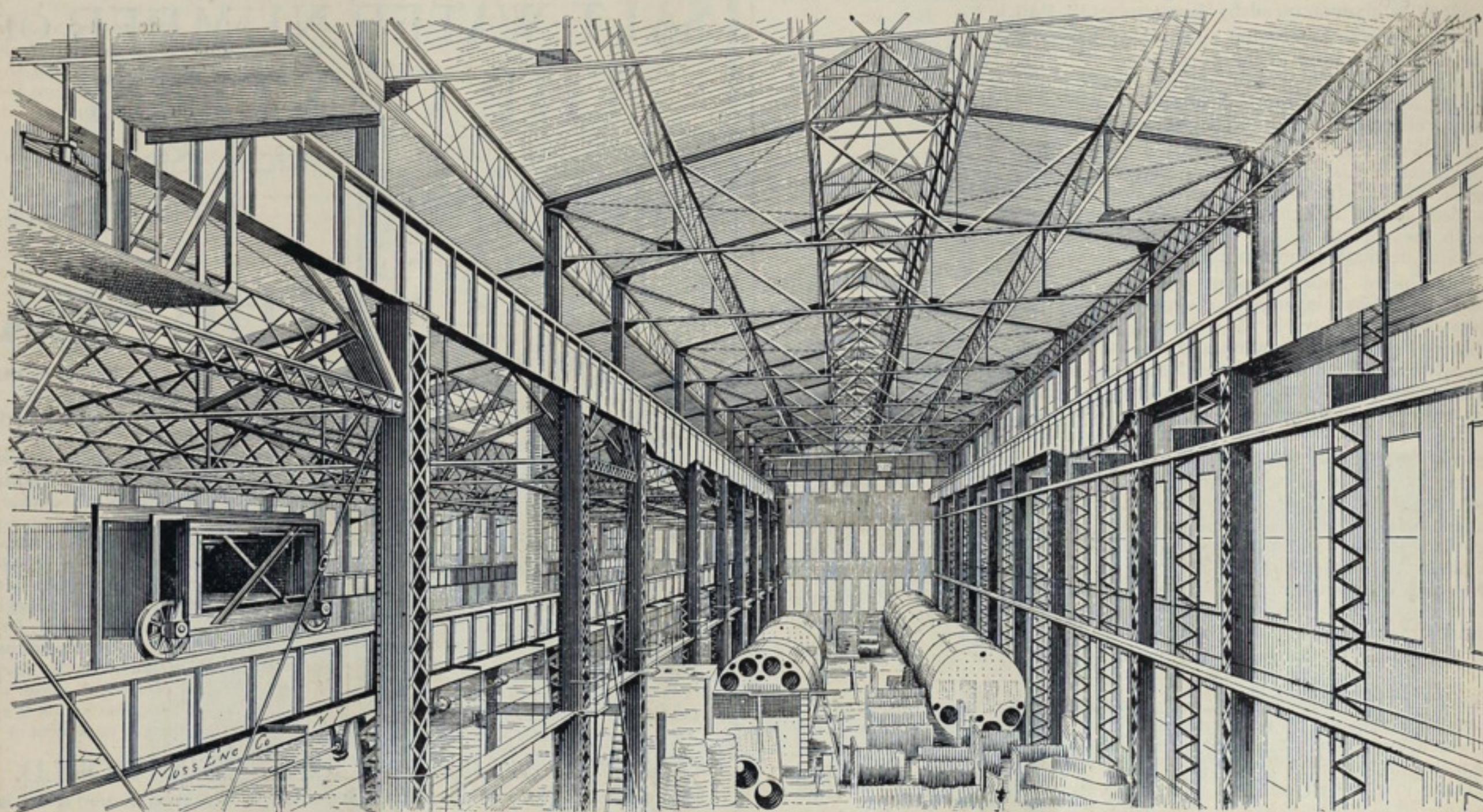
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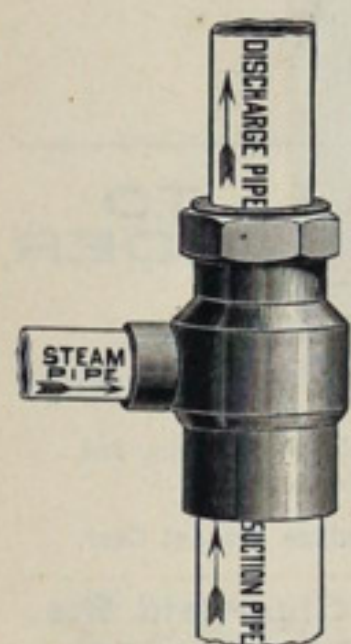
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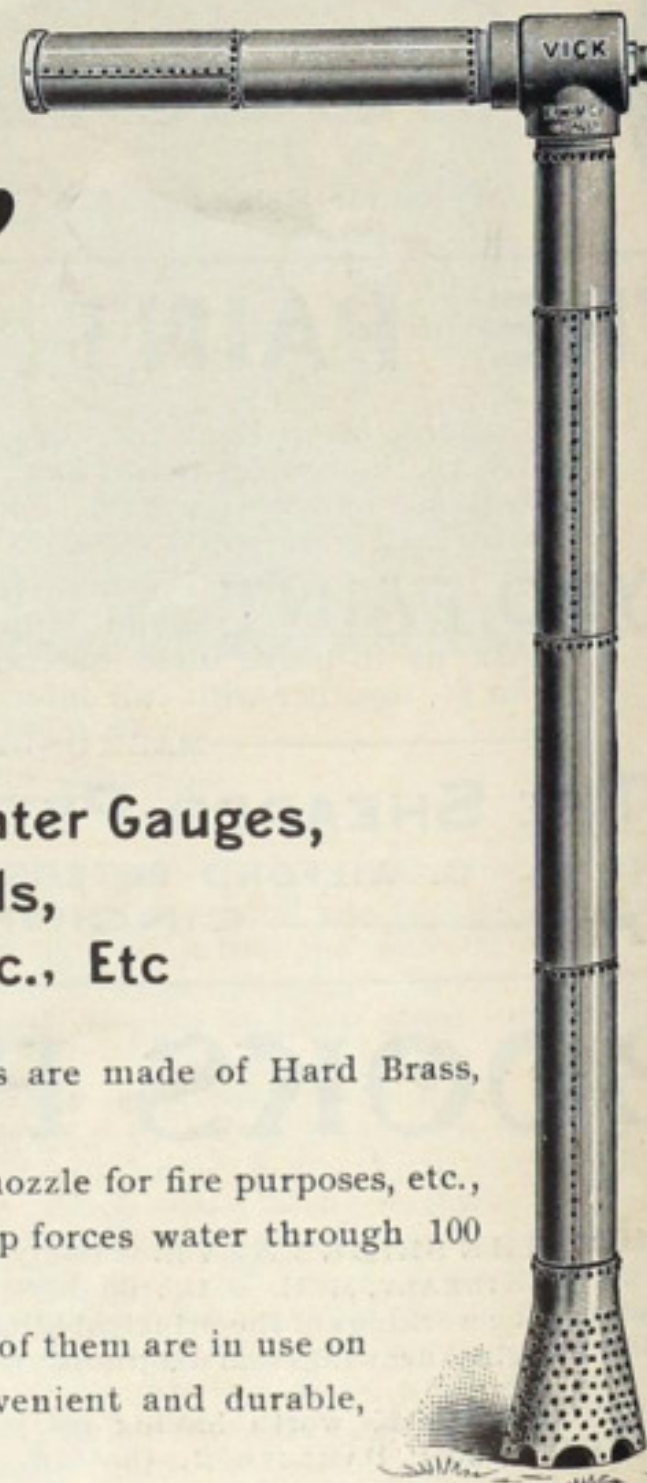
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PASSING IN NARROW CHANNELS.

"I am not disposed to make complaint against any particular vessel master," says Mr. W. C. Richardson, vessel owner of Cleveland, "but it would seem to me that the owners of ships on the lakes should for their own protection, especially in times like the present when we have a chance to make something out of our property, undertake severe measures to overcome the great danger of steamers passing tows or passing each other in narrow channels. We have laws on the subject, but it seems almost impossible to have them lived up to, and the trouble will continue as long as the owners do not show proper interest in the matter themselves. I have the facts in a case of this nature. On Friday last the steamer Samuel Mitchell came down through the St. Clair cut towing the big barge Chickamauga. Just after leaving the cut the Glidden and consort, bound up, were met approaching the Mitchell tow on the starboard side. Then came the steamer Merida bound down behind the Chickamauga. Without thought as to what might happen, and without waiting a few minutes until he got into open water, the captain of the Merida rang her up and passed the Chickamauga on the port side at full speed, his suction causing the barge to become unmanageable and swing over so that it was almost a miracle that she did not sink both herself and the Glidden. They missed each other by not more than a foot. All hands on the Glidden thought their boat was gone. The Merida would certainly have been held in fault if a serious accident had resulted, but this sort of warning will do no good unless the owners take the matter in hand themselves."

A correspondent of the New York Times refers to confusion in the popular mind as to the meaning of the term "squadron" as distinguished from "fleet" and notes that the word fleet may be used to signify the whole navy of a country, while a squadron is a part of a fleet. In naval tactics, however, the word fleet means any body of warships numbering twelve or more ships of the line, namely, battleships and first-class cruisers. A fleet is divided into three squadrons, known as the van, the center and the rear. The senior flag officer, under the fleet commander, commands the center; the next in command the van, and the third the rear—hence the term rear admiral. These are not distinctions of vital importance to the wayfaring man, and the popular definition of fleet and squadron will do well enough for ordinary usage. But in view of the events of 1898, perhaps we ought to try to make our general acquaintance with naval terminology equal to our naval standing.

Mr. W. L. Brown of Chicago, president of the American Ship Building Co., (consolidated ship yards of the great lakes), has just left Chicago for a two months' trip to Europe, sailing from New York on the Lucania. He will visit Switzerland, but most of his time will be spent in Great Britain.

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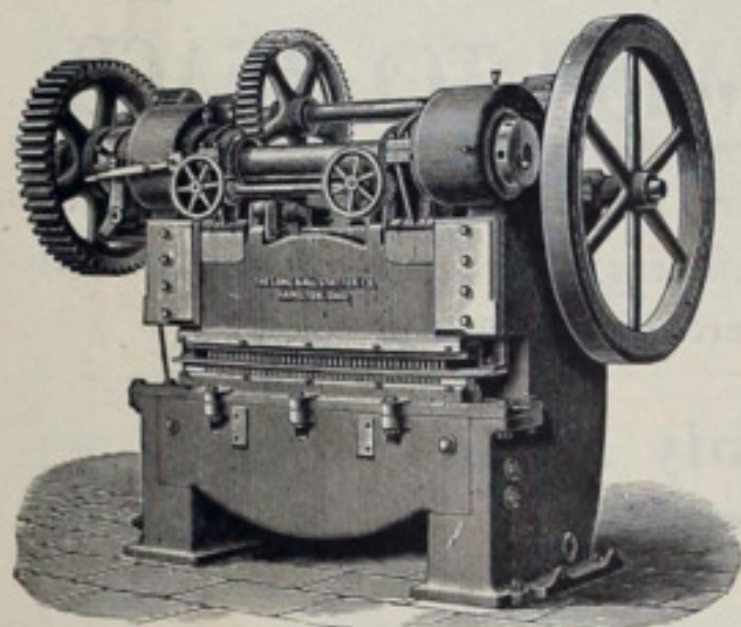
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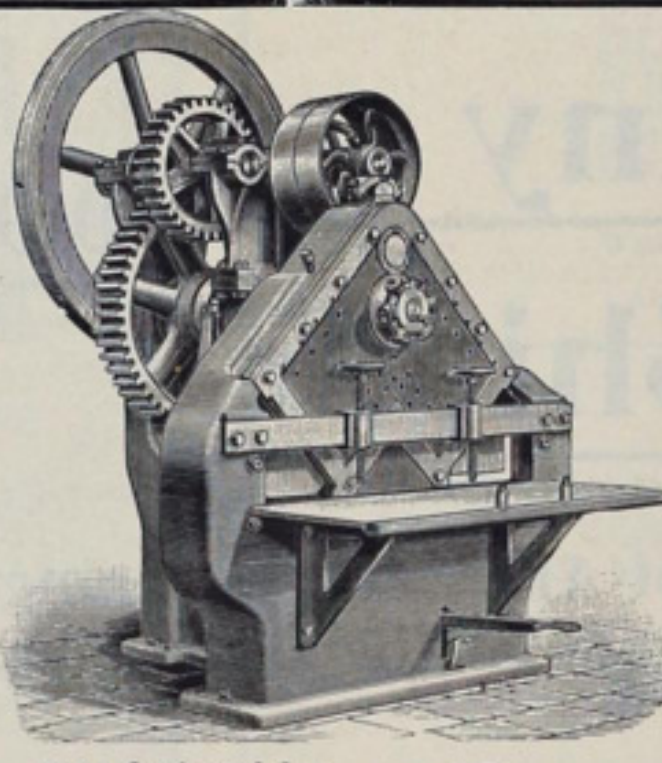
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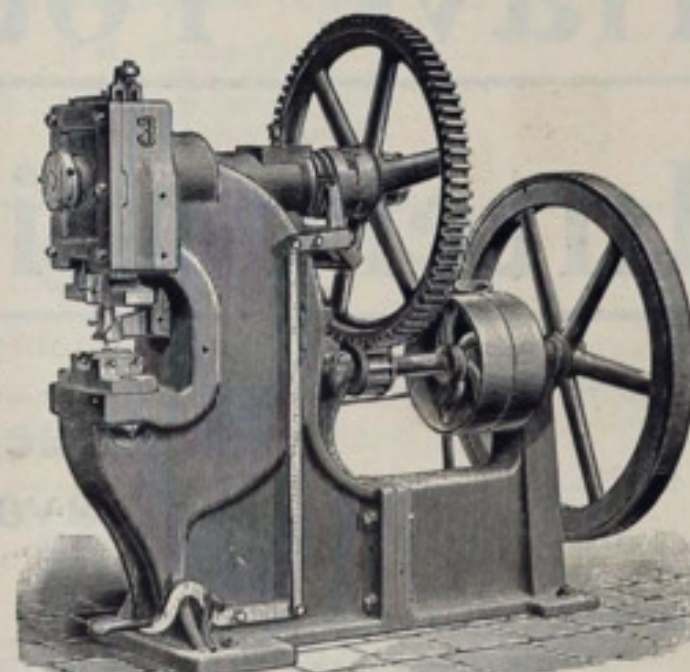


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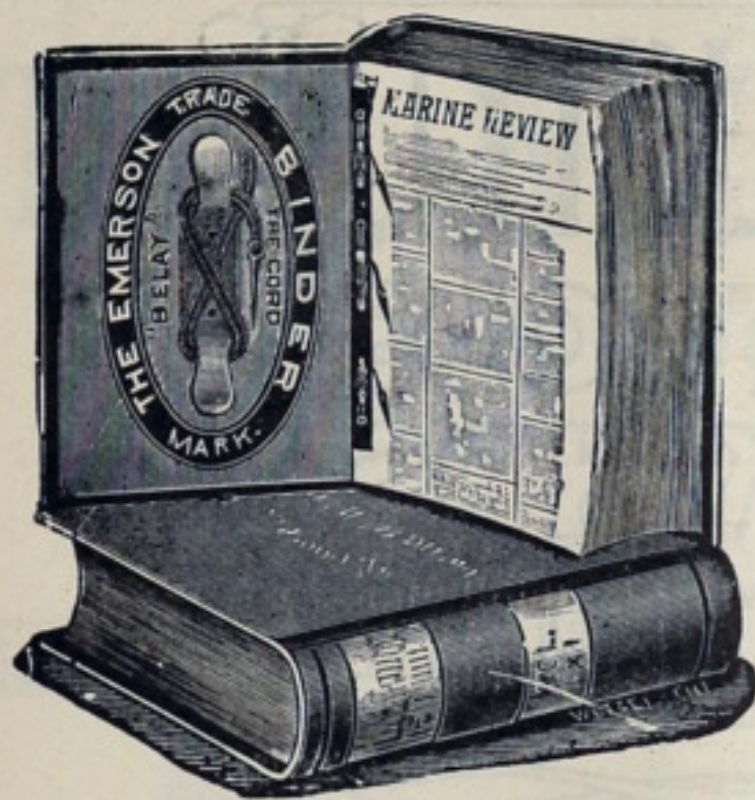
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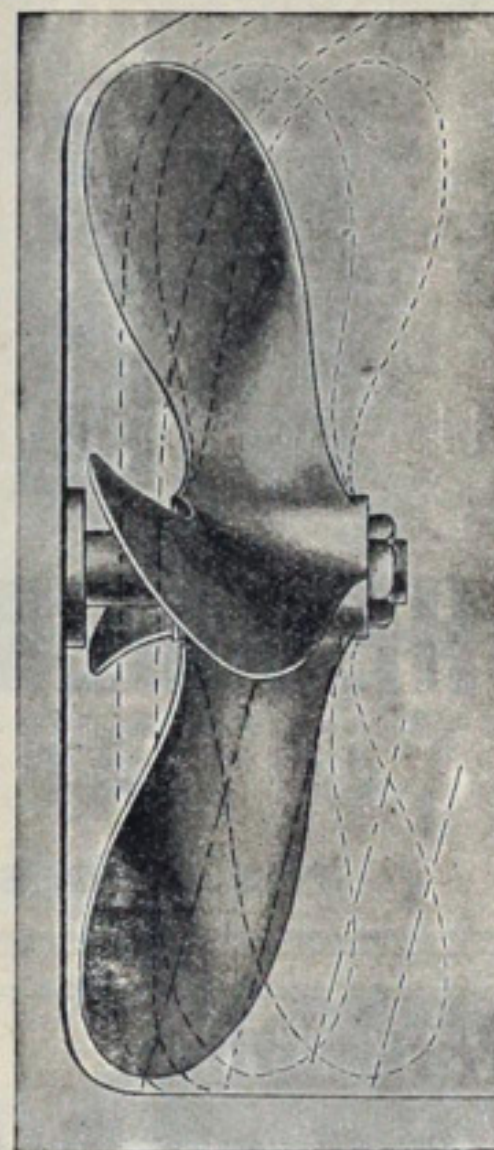
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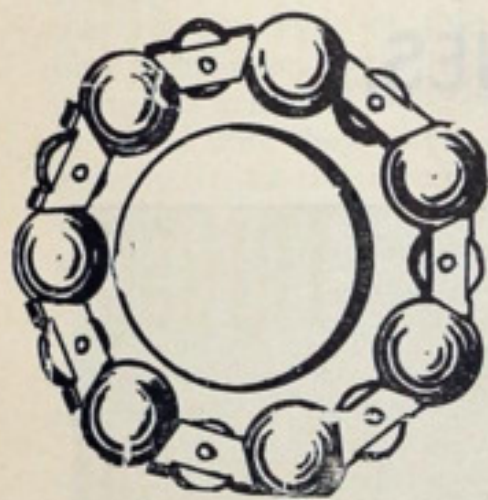
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